Vital Forms: Bodily Energy in Medicine and Culture, 1870-1925

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Abstract

This thesis explores a conceptual understanding of the body as an economy of "energy". It examines the range of real and imaginary practices that this understanding inspired, and the ways in which bodily energy was defined, discussed and culturally represented in Britain and the US across the period 1870-1925. Drawing selectively on a wide range of primary sources – scientific writing, popular science periodicals, newspaper commentaries, literary fiction and silent film – it identifies pervasive preoccupations with corporeal functionality and vitality, and considers these in relation to key social, cultural and economic changes. Employing a cultural materialist approach, and including marginal texts and little-studied archival materials in its enquiry, this study integrates cultural and scientific forms to illuminate the ways in which literary and filmic texts intersected with medical and commercial designs for the ideal body of late nineteenth- and early twentieth- century capitalism: energized, productive, appetitive and youthful.

Prevailing critical approaches both in the history of medicine and in literary studies of this period have predominantly been defined by an interest in narratives of "degeneration". This thesis identifies discourses surrounding the regulation, restoration and rejuvenation of bodily energy as projects of corporeal "regeneration", and scrutinizes the ideological and creative characteristics of the materials in which they were expressed. Part I considers discussions and representations of fatigue, neurasthenia and idleness as categories of "arrested" energy, alongside interventionist strategies such as electrotherapy and Taylorism, which sought to liberate the body's productive potential. Part II examines the discursive formation of old age as a state of "expended" energy, together with corresponding interests in the medical and cultural possibilities of "rejuvenation": the restoration of the body's youthful vigour.

This interdisciplinary approach, combining elements from the History of Medicine, Labour History, Cultural Studies, Literary Studies and Film Studies, facilitates distinct contributions to each of these areas. In addition, synthesizing materials from each field sheds new light on an expansive network of interlinked and mutually-illuminating discourses relating to bodily energy, the full extent of which has, until now, been largely obscured by a more conventional scholarly adherence to disciplinary boundaries.

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My involvement with the Wellcome Trust Seed Award-funded project "Pasts, Presents and Futures of Medical Regeneration" at the University of Leeds since October 2015 has enriched the content of this study and its critical perspectives in ways I could not have predicted. I am grateful to Dr James Stark for offering me the opportunity to work on such a remarkable project, and for his feedback and encouragement pertaining to research I have undertaken in this role which builds upon aspects of this thesis. My fellow workshop participants on the project have provided stimulating and thought-provoking multidisciplinary perspectives which have influenced both my critical understanding and my methodological approach.

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Declaration

I declare that all material in this thesis is my own work. Parts of Chapters Two and Three appear in an article titled “Disruptive Energies: Electrotherapy and Early Fiction Films in Europe and America, 1907-1911” published in the *Journal of Literary & Cultural Disability Studies*, vol. 9, no. 3, October 2015, pp. 295-312. No part of this thesis has otherwise been published or submitted for examination at the University of York or any other institution.

Introduction

Writing in the monthly magazine *The Century* in 1900, the high-profile and influential Serbian-American engineer Nikola Tesla addressed "The Problem of Increasing Human Energy".[1] Applying the laws of mass and force to the human body, Tesla observed that the mass of the body – its quantity of matter measured under a given force – is "constantly exchanged, new taking the place of old". Man "grows, propagates, and dies", he added, and in doing so, alters his own mass "both in bulk and density". This dynamic, mutable state of being operated according to the agency of each individual. Every person, he argued, is capable of "increasing or diminishing his velocity of movement by the mysterious power he possesses of appropriating more or less energy from other substance, and turning it into motive energy". "The great problem of science", he posited, "is, and always will be, to increase the energy thus defined" (177).

Tesla rooted his argument in a conception of the human body as an entity governed by the principles of energy conversion and entropy. The First Law of Thermodynamics, elaborated by physicists in the 1840s, stated that the total quantity of energy in the universe remains constant: energy can change form, but the total amount of energy neither increases nor decreases. The Second Law of Thermodynamics, formulated two decades later, stated that during this process of conversion, a proportion of energy dissipates into an unusable form.[2] This dialectic between energy and entropy seemed to represent competing visions of modern civilization: the innate power and potential of all physical and biological phenomena on the one hand, and the inevitability of abatement and decline on the other. In mapping the physical laws of thermodynamics onto the physiology of the human body, Tesla's article encapsulated this contradiction. Across the life course, from birth to death, the body's mass diminished, and its motive energy tended towards depletion. Interventions could, however, be made to conserve and restore that energy. "Viewed generally", Tesla wrote, "there are obviously two ways of increasing the mass of mankind: first, by aiding and maintaining

[1] Tesla's article represents one of the rare uses of the term "Human Energy" which has not been extensively employed or coherently defined. Elsewhere, the French philosopher Pierre Teilhard has defined it as "the sum total of physico-chemical energies either simply incorporated in or at a higher degree of assimilation cerebralized in, the human planetary mass at a given moment; the mass in question being considered in its linked totality, not only of its biological constituents, but also of its artificially constructed mechanisms." See Teilhard, *Activation of Human Energy*, Harvest Books, 1976, p. 387.

[2] For background on these formulations and more on nineteenth-century energy science, see Crosbie Smith, *The Science of Energy: A Cultural History of Energy Physics in Victorian Britain*, University of Chicago Press, 1998.

those forces and conditions which tend to increase it; and second, by opposing and reducing those which tend to diminish it" (178). Tesla conceptualized human energy as a power possessed and exercised by an individual body, citing specific substances, and specific practices, which he believed had the potential to inhibit or increase it. Stimulants such as alcohol, caffeine, and nicotine, for example, were "negative" or "frictional" forces "retarding the human mass" (188). Conversely, physical activity (linked to gainful employment), marriage and reproduction played an important part in replenishing the body's vital forces. Where energy possessed by an individual body was lacking, external energizing forces – for example electricity, chemical energy in food, and the radiant energy of the sun – could be absorbed and harnessed.

I open with Tesla's conceptualization of "human energy" as one illustrative example of the kinds of discussions surrounding the energy of the body that were in circulation at the turn of the twentieth century. And while new scientific interest focused on bodily energy as a physiological force (as exemplified by Tesla), political and economic discourse also converged on the body's functional potential. Discussions of "energy" were central to these debates, together with those surrounding the closely related term "vitality". In 1909, the American economist Irving Fisher published his *Report on National Vitality*, the object of which was "to review briefly the condition of American vitality, contrasted with the vitality of other nations, to show the extent to which it may be increased; and to point out the value of such an increase in years of life, enjoyment of life, and economic earnings" (14). Where Tesla had drawn on the principles of thermodynamics to underscore the importance of managing the body's energies productively, Fisher emphasized the possibilities afforded by medical science in regulating the energies of the nation from youth into old age. Identifying "evidences of a world-wide awakening to the importance of improving human vitality" (14), he explored a range of approaches to this end, from public and personal hygiene practices to the length of the working day, to the emerging science of eugenics.[3]

[3] The nineteenth century saw the emergence of modern eugenics. In 1904, Francis Galton defined eugenics as "the science which deals with all influences that improve the inborn qualities of a race; also with those that develop them to the utmost advantage". See "Eugenics: Its Definition, Scope, and Aims", *The American Journal of Sociology*, vol. X, no.1, July 1904, pp.1-25 (p.1). Though the eugenics movement extended across the period covered by my study in both Britain and the US, my primary focus is on the "regeneration" of existing bodies, as opposed to the biological engineering of a future race. For more on the study and practice of eugenics at this time, see Daniel J. Kelves, *In The Name of Eugenics: Genetics and the Uses of Human Heredity*, Harvard UP, 1995.

These scientific and socio-economic discussions surrounding bodily energy had their counterparts in broader cultural discourse. During the period covered by this study, a healthy body was defined as one which displayed energy, vitality, dynamism and a robust capacity for work of all kinds. In newspapers and magazines, scientists and physicians identified the hallmarks of physiological inefficiency and decline, from fatigue and nervous exhaustion to impotence and ageing. Drawing on new forms of specialist knowledge in the emerging fields of psychology, endocrinology and gerontology, they suggested new treatments and products for corporeal re-energization. Social commentators expressed hopes and fears concerning the collective energies of the industrial workforce, and their contribution to the economic and racial superiority of western nations. Articles along these lines often appeared alongside advertisements for medical commodities marketed to boost depleted energies and restore youthful vitality. In addition, fiction writers and filmmakers offered their own take on these practices and ideas. Short stories and novels – more widely available than ever before with the expansion of the publishing industry – told tales of old or exhausted bodies revitalized by innovative means. From the turn of the century onwards, the new medium of cinema also took up these themes, fully exploiting film's capacity for visual spectacle and conceptual fantasy as it did so. These diverse sources and agents from across the scientific, economic and cultural spheres shared the same concern with the human body as the site of latent or depleted energies, which, once released or restored, would enact individual and collective renewal.

The project

This thesis explores the so-called "energy" of the human body, and the range of ways in which this energy was discussed, narrated and represented in Britain and the US across the period 1870-1925. Drawing on a broad range of primary materials, including scientific writing, popular science periodicals, newspaper articles, literary fiction and silent film, this study demonstrates the value of an interdisciplinary, cultural materialist approach in expanding critical understanding of scientific, economic and cultural designs for the normative modern body. I define the "normative modern body" in this context in line with dominant modes of discussing the body throughout this period: one which was energized, productive, appetitive and youthful.

There was a wide-ranging and diversely expressed interest in the vitality of the body and its vital energies during this period, closely related to a preoccupation with the efficiency of its functions. What contextual factors explain this dual fixation? In what ways did scientists, journalists, fiction writers, filmmakers and their audiences understand and

creatively envisage bodily energy? How did discussions and representations of bodily energy converge and diverge across medical and cultural materials, in accordance with the specificities of the media in which they were expressed? To what extent did medical discourses co-operate with economic, political and commercial designs for the body? And how might an understanding of the meanings and practices associated with bodily energy in this historical period inform critical perspectives on contemporary medicine, society and culture? These are the research questions that underpin my enquiry.

Interest in the energies of the human body pre-dates the era covered by this study.[4] However, this was a period in which the discussion about physical vitality – from the ancient philosophical doctrine of vitalism to long-standing social and cultural concerns with longevity and senescence – was itself re-vitalized, finding new forms of expression. The years 1870-1925 thus represent a transformative juncture in the history of conceptualizing the body. Existing scholarship focusing on the late nineteenth and early twentieth centuries across various disciplines has paid particular attention to fears surrounding the dissipation or curtailment of human capacity in discourses on degeneration, atavism and fears of race suicide (Chamberlin and Gilman; Maik; Pick; Soloway). However, fewer studies have examined the ways in which these anxieties about biological, moral and racial decline were counterbalanced by a more optimistic interest in the physical potential of the human body, and in projects of corporeal "regeneration" through which this potential might be achieved. This thesis departs from current scholarship by examining discourses commonly associated with bodily degeneration and decline (fatigue, neurasthenia, idleness, ageing), alongside selected interventionist strategies of corporeal regeneration (electrotherapy, Taylorism, anti-ageing "rejuvenation" treatments). Until now, these topics have, for the main part, been considered separately, as distinct practices and discourses which are the province of a particular discipline. This study emphasizes instead their united conceptualization of the human body as a mutable, malleable entity capable of extraordinary material transformations in either direction. By foregrounding the topic of bodily energy and employing an interdisciplinary approach in analyzing it, it makes an original contribution to knowledge that is of relevance to a number of fields, including the history of medicine, labour history, ageing studies, cultural studies, literary studies and film studies. Finally, it situates its late-

[4] Robert Hockey notes that whist the use of the term energy in connection with human energy dates back "at least to the Enlightenment, reflecting the newly emerging conceptions of the mechanical nature of living organisms by Descartes and others", from the 1860s onwards it took on a new meaning, gradually incorporating expressions giving the sense of "a limited supply". See Hockey, *The Psychology of Fatigue: Work, Effort and Control*, Cambridge UP, 2013, p. 43.

nineteenth and early-twentieth-century analyses in relation to pressing contemporary debates surrounding labour productivity and "healthy" ageing.

The meanings of "energy" as pursued here

In her introduction to the special issue of *Nineteenth Century Contexts: An Interdisciplinary Journal* on the topic of "Nineteenth-Century Energies", Lynn Voskuil observes that "the idea of energy in the nineteenth century was indeed protean because scientists, engineers, and ordinary people used it in varying ways that both competed and overlapped" (390). Voskuil emphasizes the "widespread adaptability" of nineteenth-century concepts of energy – the remarkable readiness with which these concepts "moved from scientific domains to social and aesthetic ones – and back again" (391). The climate of speculation Voskuil describes was further compounded by the lack of clear distinction between the literal and metaphorical senses of the word; energy as external phenomenon (e.g. electricity), as physical force (i.e. kinetic movement), and as a human or bodily property (i.e. individual mental or physical powers). Discourses of energy were pervasive, but often indeterminate, conceptualized in varying ways according to the criteria and characteristics of the particular contexts in which they operated. Bodily energy might, then, have referred to an individual's capacity for work in terms of both physical ability and moral proclivity (the latter inviting questions of willpower and motivation). At the same time, it could also denote a more general sense of vitality, vigour or verve, both as a condition of health and as a personal attribute.

Throughout the nineteenth century, the body was defined in both philosophy and medicine as a closed system of energies. According to this model, physical and mental energies, allocated to an individual in greater or lesser quantities at birth, circulated internally: the energies of the body could be expended, but they could not be replenished from external forces. This notion was embedded in the concept of *vis nervosa*, defined by the Czech-Austrian physiologist Georg Prochaska in 1851 as an elemental form of latent energy through which "the animal body becomes capable of functions which cannot be explained either by the mechanical and physical laws of motion, or by the laws of the animal-sentient forces" (188). The force of the *vis nervosa* varied according to a range of factors, including age, sex, climate and disease (Reynolds 1711). The concept of the *vis nervosa* corresponded with the doctrine of vitalism, which accounted for the "origin and phenomena

of life" that was "due to or produced by a non-material 'vital' principle, as distinct from a purely chemical or physical force" ("vitalism, n.").[5]

By the later decades of the nineteenth century, the consensus on vitalism was increasingly challenged. But the idea of the body's vital force persisted in the medical and cultural imagination. An understanding of the body as the seat of vital energies expended through activity and growth offered a useful metaphor through which both physician and patient could frame the condition of the human form across the life course. Those whose physical capacity was compromised through fatigue or nervous exhaustion could view themselves as energy-deficient. In the same way, those individuals approaching middle age or old age were able to understand the physical changes they experienced as a process of energy expenditure. This perspective on the body as a "closed" system of limited energies however, did not preclude the possibility that the human form could be re-energized through medical, technological or social engineering. The metaphor of the human body as an economy of energy provided both an intelligible explanation for its impaired capacity, whilst at the same time offering the pretext for new restorative solutions.

Primary Materials

The expansion of digital archives in recent years has enabled me to consult a breadth of materials which reveal the diversity of discussions and debates on the meanings of bodily energy in my period of interest. When researching contemporary medical, scientific and economic texts, Archive.org has proved to be an invaluable resource. The British Newspaper Archive and the Library of Congress's "Chronicling America: Historic American Newspapers" collection have provided useful details surrounding the reception of particular medical developments and cultural narratives.[6] In considering film exhibition and distribution practices and fan magazines, I have made extensive use of the Media History Digital Library.[7] I have also sought out little-studied and neglected materials at a range of

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[5] Vitalism has a long history in medical philosophy dating back to Ancient Egyptian and Greek thought, but attracted renewed interest among eighteenth- and early-nineteenth-century biologists, who sought to investigate whether living organisms possess a life-energy for which physical laws cannot fully account. For a study of definitions and typologies of vitalism in the context of nineteenth-century science see E. Benton, "Vitalism in Nineteenth-Century Thought: A Typology and Reassessment", *Studies in History and Philosophy of Science*, vol. 5, no.1, May 1974, pp. 17-48.

[6] See *The British Newspaper Archive*, Findmypast/The British Library, 2016, britishnewspaperarchive.co.uk, and *Chronicling America: Historic American Newspapers, Library of Congress*, chroniclingamerica.loc.gov.

[7] See *Media History Digital Library: A Resource for Film, TV and Radio History*, led by David Pierce and Eric Hoyt, mediahistoryproject.org.

archival sites, including: the British Library, the Wellcome Library, the National Film Archive, London, and the Library of Congress, Washington, D.C. My aim has been to bring histories and perspectives from Britain and the US into dialogue with one another, whilst also retaining a sense of their social and cultural specificities.

The primary materials I analyze in this thesis can be broadly categorized in two groups: popular print culture (comprising newspapers, mass-market magazines and periodicals, novels, and advertising), and silent film. Although, as I later demonstrate, these forms did not exist in isolation from each other, since I draw so frequently on these two types of materials in the chapters that follow, here I consider the distinctive historical and material contexts pertaining to each.

Popular Print Culture

In the late nineteenth and early twentieth centuries, a new popular print culture emerged.[8] The development of industrial infrastructure in printing and distribution, together with rising literacy rates, generated a new mass market in the printed word. More than four hundred and twenty newspaper companies were formed in Britain from the 1850s onwards, including metropolitan and provincial titles, weeklies and dailies (Baylen 34). In the 1880s, newspaper circulation in the US more than doubled (Zboray and Zboray 29-30). Cheaper prices facilitated a greater market reach across a wide-ranging demographic, and this expansion also generated increased appetite for new and varied content. On both sides of the Atlantic, the newspaper came to occupy a new position at the forefront of national life, registering and expressing the climate of current thought and opinion on topics of the day across a wide spectrum.

At the same time, mass-market magazines and periodicals proliferated, offering both a format and content that was newly accessible to a broad demographic.[9] This thesis

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[8] Here, and throughout this thesis, I adopt Christine Bold's definition of popular print culture as "the plethora of affordable and accessible forms as they entered the everyday lives of large swathes of the population, accompanied by the contested values, shifting power dynamics, and socio-economic upheavals of industrializing America", whilst also applying this definition to the British context. See Bold, Introduction, *The Oxford History of Popular Print Culture, Vol.6: US Popular Print Culture 1860-1920*, edited by Bold, Oxford UP, 2012, pp. 1-19 (p. 4).

[9] Alan Nourie defines "mass-market" magazines as titles which appealed "to fairly large populations within the much larger population…all capable of achieving circulations of more than 100,000 and many of more than a million". See Introduction, *American Mass-Market Magazines*, edited by Alan Nourie and Barbara Nourie, Greenwood Press, 1990, pp. vii-x (vii). For analysis of the growth of periodical publishing in Britain, see Richard D. Altick, *The English Common Reader: A Social History of the Mass Reading Public, 1800-1900*, 2nd Ed., Chicago UP, 1957, pp. 318-64.

considers articles and commentaries from a range of magazines and periodicals that emerged with these changes. Leading national publications in the US such as *Scribner's Monthly* (1870-1881, becoming *The Century* 1881-1929) and the *Atlantic Monthly* (founded 1857), covered literature, science and travel. The mid-priced monthly *McClure's*, founded in 1893, also had wide-appeal – by 1896, it enjoyed circulation figures of 250,000, placing it ahead of all other American magazines in terms of popularity and advertising patronage (Chlebek 248).[10] In Britain, serialized fiction and short stories appeared in the likes of *The Strand* (founded 1891) which became the country's foremost general interest and popular interest monthly magazine (Ashley, "The Strand Magazine"). In both Britain and the US, circulating libraries and subscription schemes, dime novels, and cheap reprints offered more access to paperback novels than ever before (Bold, "Introduction" 9; Cushman Schurman). This was the era of the bestseller: popular writers such as Marie Corelli (whose work I consider in Chapter Six) qualified for this category by selling hundreds of thousands of copies of their books (Morisson 134).[11]

The growth in commercial publishing throughout the nineteenth century, in combination with increased literacy rates, led to a new popular interest in areas of knowledge which had previously been more specialized. This is particularly apparent in the circulation of scientific and medical discourses across the wider public sphere. It was an era in which physicians engaged with non-specialist audiences in diverse settings, performing demonstrations and lectures on scientific topics, and contributing to a range of magazines, journals and newspapers. The reach and readership of these publications was substantial. In the US, general interest science magazines such as *Scientific American* (founded 1845) and *Popular Science Monthly* (founded 1872) enjoyed enormous popularity informed by the growth of science education in US schools (Hinnant and Hudson 126).[12] "The work of creating science has been organized for centuries…the work of diffusing science is clearly

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[10] Entries in Nourie and Nourie's volume cover a number of these magazines. See, for example, James Hart's entry on *Harper's Magazine*, pp. 149-52 and Jean M. Parker's overview of *Atlantic Monthly*, pp. 32-39. For details of *Scribner's Monthly/The Century Magazine*, see Frank Luther Mott, *A History of American Magazines*, *Vol. 3: 1865-1885*, Harvard UP, 1957, pp. 457-480.

[11] For a statistical survey of growth in the British book industry across the period, see Simon Eliot, "Some Trends in British Book Production, 1800-1919", *Literature in the Marketplace: Nineteenth-Century British Publishing & Reading Practices*, edited by John O. Jordan and Robert L. Patten, Cambridge UP, 1995, pp.19-43.

[12] For the publication history of *Scientific American* see Frank Luther Mott, *A History of American Magazines, Vol. 2: 1850-1865*, Harvard UP, 1957, pp. 316-324. On *Popular Science Monthly*, see Priscilla Matthews' entry in Nourie and Nourie, pp. 385-399.

the next great task of civilization", *Popular Science Monthly* editor Edward Livingston Youmans announced in the magazine's first issue in 1872 (114). Early issues incorporated articles from English periodicals, together with extended discussion of scientific topics in the news. The writers featured in the pages of the magazine were from diverse backgrounds, professions and perspectives: articles and commentaries from chemists, biologists, and physicians appeared alongside those written by social reformers, clergymen, philosophers and psychologists whose affiliations and qualifications were not always clear.

In Britain, articles on scientific developments appeared alongside fiction and political commentary in the pages of non-specialist publications such as *Cornhill Magazine* (founded 1860), *Chambers's Journal of Popular Literature, Science, and Arts* (founded 1832 as *Chamber's Edinburgh Journal*) and the *Illustrated London News* (founded 1842). In such bricolage formats, the boundaries between "scientific" discourse and other forms of knowledge were permeable: public understanding of new scientific, technological and medical ideas was culturally mediated.[13] Yet, despite this fluidity, as G. Dawson, Noakes and Topham have noted, "historians of science still often use periodicals as relatively transparent records of the opinions either of the authors of individual articles or of particular publics, rather than considering periodicals as objects in themselves" Meanwhile, "periodical historians have tended not to examine "the interpenetration of scientific and other forms of discourse" in these cultural forms (25).

In paying particular attention to British periodicals and general interest magazines as "sites of controversy and interchange, and their role in processes of literary replication" in relation to science (26), Dawson et al. are part of a wider group of scholars who have begun to explore the intersections of science and culture in the category of "popular science". Critics such as Secord and Topham ("Focus") have highlighted the ways in which historically, academic use of the terms "popularization" and "popular science" has often presupposed scientists to be the primary agents of knowledge production and dissemination, and non-specialists to be the passive recipients of this. Most criticism and scholarship on the encounters between scientific and cultural forms now conceives this relationship as one of

[13] See Dawson et al., Introduction, *Science in the Nineteenth-Century Periodical: Reading the Magazine of Nature*, edited by Geoffrey Cantor et al., Cambridge UP, 2004, pp. 1-34 (p. 2 and p. 6). This book builds on the works of the SciPer project (1999-2007). Jointly-funded by the Arts and Humanities Research Board (AHRB), the Leverhulme Trust, the Medicines and Healthcare products Regulation Agency (MHRA) and the University of Leeds, the project explored the popular dissemination of science in the nineteenth century through the medium of periodicals designed for a general readership published between 1800 and 1900. See "Science in the Nineteenth-Century Periodical", *HRI Digital*, The University of Sheffield, 2013, hridigital.shef.ac.uk/sciper/.

reciprocity and exchange, as opposed to unidirectional influence (see, for example, Cooter and Pumfrey; Beer, "Open Fields"; G. Dawson).

For the purposes of this study, I adopt O'Connor's perspective on popular science as "a heterogeneous network of cultural exchanges and feedback loops between different social groups" surrounding scientific and medical ideas and practices (336), together with Daum's emphasis on popularization as a process of knowledge-making incorporating a "plurality…of producers, audiences and public sites" with "reciprocal and changing roles which may overlap" (322). The increased visibility and new accessibility of scientific and medical ideas in Britain and the US was not confined to the pages of popular scientific treatises, magazines and newspaper articles. It was also evident at a range of cultural sites. The discursive links between science and culture throughout this period were, as Andrew Mangham has observed, "fluid and inspired" (289). From general interest science periodicals to cheap paperback novels, through comic fiction films, patent advertisements and arcade machines, this thesis demonstrates the diverse contexts in which readers, cinema-goers and consumers encountered the mechanisms of scientific popularization in their everyday lives.

Where late nineteenth-century scientific and medical ideas intersected with new forms of cultural production, a new popular genre emerged: science fiction. Martin Willis has pointed out that scholars have typically identified the beginnings of the science fiction genre in the mid-1920s, when the term itself emerged as a descriptive category,[14] and in so doing, have neglected the importance of nineteenth-century texts (*Mesmerists* 14).[15] In his book *Mesmerists, Monsters and Machines: Science Fiction and the Cultures of Science in the Nineteenth Century*, Willis articulates the limitations of the science fiction genre to date in addressing the complexity of encounters between scientific and cultural forms. Literary scholars, he notes, often fail to engage substantively with the scientific contexts of the fictions they examine. In too many instances, "the importance of science has been relegated to that of a checklist against which the critic can check the correctness of a fiction writer's

[14] The common abbreviation 'SF' was coined in the 1950s, as the genre grew. See Roger Luckhurst, *Science Fiction*, Polity Press, 2005, p. 1.

[15] Adam Roberts' *The History of Science Fiction* (Palgrave, 2007) offers a chronological overview of the genre from ancient novel to twenty-first century. Like Luckhurst's *Science Fiction*, it admits a narrow criterion for thematic inclusions. Both titles confine coverage of the late nineteenth and early twentieth centuries to one or two chapters only, focusing predominantly on developments from the mid-twentieth century. The majority of examples given are literary, with some discussion of film, though not from the silent era. For more on the politics of science fiction criticism, see Farah Mendlesohn, "Science Fiction in the Academies of History and Literature; or, History and the Use of Science Fiction" in *Science Fiction, Canonization, Marginalization, and the Academy*, edited by Gary Westfahl and George Slusser, Greenwood Press, 2002, pp. 119-26.

knowledge of scientific fact" (12). Willis's insistence on "a continuously cyclical process of influence and self-reflection within scientific, social and cultural disciplines" underpins his analyses of canonical literary science fiction narratives from the nineteenth century. He offers his book as both a contribution, and invitation, to a more equally balanced interdisciplinary approach: one which demonstrates "how readings of science fiction texts benefit from extended exposure to the specific scientific histories that were so important in their making" (236, 2).

In accordance with Willis's methodological call in this area, this thesis offers historicist analyses of a number of literary science fictions from the late nineteenth century which engaged with the topic of bodily energy. As a field of scholarship, science fiction must often defend itself against accusations that its primary materials are of little "literary, social, and intellectual merit" (Willis, *Mesmerists* 12). Researchers working on science fiction in the late nineteenth and early twentieth centuries have therefore tended to focus attention upon canonical writers, offering re-readings of familiar texts or new readings of their lesser-known works to gain critical traction. My own focus on marginal texts by high-profile writers such as Edward Bulwer Lytton and Jack London, follows in this vein. However, in addition, I have also selected works by neglected or unknown writers including Marie Corelli and Gertrude Atherton, together with fictions by otherwise-obscure authors published in little-studied mass-market literary magazines. What these speculative fictions may lack in literary merit, they more than compensate for in imaginative creativity and cultural significance.

The expansion of popular print culture from the late nineteenth century onwards also facilitated the growth of advertising. In Britain, the removal of taxes on advertising in the mid-century licensed advertising agents to promote goods and services through new channels.[16] Advertising became an organized and flourishing industry, with its own trade journals advising on new strategies and approaches.[17] Newspaper titles became increasingly dependent on sales and advertising revenue: by 1900, advertising represented half of US mainstream newspapers' income (Schudson 93), whilst in Britain, patent medicine advertisements underwrote a large number of periodicals (Richards 177). Within the new

[16] The Advertisement Tax was abolished in 1853, and the Stamp Duty in 1855. For further details on the mid-century campaign against press taxes, see Martin Hewitt, *The Dawn of the Cheap Press in Victorian Britain: The End of the 'Taxes on Knowledge', 1849-1869*, Bloomsbury, 2013.

[17] See, for example, *Advertising* (1891-1914), *Advertiser's Review* (1899-1904), *Advertising World* (1901-1940).

commodity culture, the medical marketplace was booming, as newspapers and magazines became repositories for lavish and loosely-regulated health advertising claims. From the 1880s onwards, advertising forms took a visual turn. New printing technologies led to the inclusion of halftone images in magazines and advertising and the launch of new pictorial publications.[18] Advertisers mobilized the persuasive power of spectacle to illustrate and animate a new world of material possibilities. Advertisements from this period thus bear the material traces of "an organized system of commercial information and persuasion" which, according to Raymond Williams, emerged between 1880 and 1930 as part of "the modern distributive system of conditions of large-scale capitalism" (*Culture* 201). Across these years, sites and strategies for consumption grew exponentially, inviting the spectator-consumer to invest in the promise of personal transformation in commodity form. My analyses of advertisements from this period draw on examples from a number of these sites – the literary periodical, the mail-order catalogue, the cinema lobby display – and I approach each one as both the index and instrument of an aggrandizing consumerist discourse.

Silent Film

In 1895, the Lumière brothers staged the first public showing of projected images in the basement of a Paris café. The event heralded the birth of a new medium. Cinema emerged from a network of practices and media which together comprised early popular visual culture. Yet it also represented a distinctive visual language, and registered a particular interest in the gestures and movements of the human body.

Medical and cultural histories of the late-nineteenth and early-twentieth centuries alike have tended to prioritize literary texts ahead of filmic ones. This is perhaps unsurprising given the particular challenges associated with research into silent film. Anecdotal estimates of survival rates for films produced during the silent era (1895-1927) range between 10% and 30%. Evidence-based reports are less common, and where they exist, offer only a partial picture, though the figures largely support this general impression. For example, a survey commissioned by the Library of Congress in 2013 concluded that just 14% of American feature films from the period 1912-1929 survive as complete 35mm copies, with a further 11% extant in other editions or formats, such as foreign-release versions or 16mm prints (Pierce 21). Furthermore, surviving prints do not necessarily exist in the national archives of

[18] The first British pictorial daily, the *Evening Illustrated Daily*, launched in this decade. See J. O. Baylen, "The British Press, 1861-1918" in *Encyclopaedia of the British Press, 1422-1992*, edited by Dennis Griffiths, Macmillan, 1992, pp. 33-46 (p. 38).

the countries which originally produced them, and are often stored or restored (where this is the case) by foreign libraries, studios and archives.[19] An unknown number of titles also survive in private collections, where accessibility is even more problematic.

These difficulties notwithstanding, silent film commands scholarly attention within this study for a number of reasons. The first of these is the close relationship between motion pictures and other forms of popular culture which grew and diversified across the first two decades of the twentieth century. Joe Kember has described early filmmakers, exhibitors and audiences as "sophisticated interpreters of an immense textual, intertextual and contextual range of information" (*Marketing* 4). In its earliest years, cinema presupposed a familiarity on the part of the viewer with a variety of other cultural referents and narratives, including local, national and international stories and events. Secondly, and relatedly, the capacity of the medium to assimilate and reproduce such discourses was facilitated by cinema's internationalism. Silent film distribution networks operated a fluid traffic across the US, Europe and beyond. Figures based on Britain's *Bioscope Annual & Trades Directory* for 1910-1911 cite a host of foreign film-makers with offices or agents in Britain by this time, including major US producers Biograph, Edison, Essanay, Lubin, Luz, Selig and Vitagraph (Low 2: 56-57). Films produced in France also enjoyed a strong market share across Britain and the US in cinema's first two decades. French filmmakers Georges Méliès and Gaumont had offices in London (Low and Manvell 21) and Pathé-Frères opened sales offices in England, North America, Germany, Japan and South America. In fact, by October 1906, Pathé accounted for over a third of the total films shown on American cinema screens, and by 1909, supplied more than a half of the large quantity of French releases in Britain (Musser, *Emergence* 488; Low 2: 4).[20] Although the distribution landscape would shift in the subsequent years of the silent era, films from Europe and the US would continue to register and re-express shared thematic and topical concerns in lively and creative ways.

Early cinema's close reliance on existing cultural referents, then, together with its international distribution structure and its ontological interest in imaginative fantasy and visual illusion, recommend it as an influential and important medium within this study. Cinema enacted a series of uniquely transformative encounters with contemporary

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[19] For a detailed summary of surviving film elements for American feature films produced between 1913 and 1929, see David Pierce, *The Survival of American Silent Feature Films: 1912-1929*, Council on Library and Information Resources and The Library of Congress, 2013, pp. 37-54.

[20] Richard Abel examines the dominance of the Pathé company's output on the American market during the nickelodeon era in *The Red Rooster Scare: Making Cinema American, 1900-1910*, University of California Press, 1999.

discourses of bodily energy. On the one hand, films sought to reflect and reinforce conventional values and institutionally imposed norms. Kember, for example, has suggested that the prevalence of stock characters and comic typage in early cinema functioned to "playfully reinforce prevalent social constructions of gender, race, age and class identity" (*Marketing* 156-57). On the other hand, there is a real sense in which cinema provided a discursive space for filmmakers and their audiences to work through the seismic economic, social, cultural and experiential changes we have come to associate with modernity. Thus, although a number of the films in this thesis circulated and reinforced dominant medical, social and economic discourses surrounding bodily energy, others functioned as a means by which spectators could recognize their ubiquity and, on occasion, their absurdity. Sometimes, these processes of reinforcement and detachment occurred within the same film.

Early cinema scholarship has not reached a consensus in periodizing the developmental stages of the medium. Nonetheless, the majority of scholars now agree that the history of the silent era – the period between the Lumières' 1895 event and the release of the first feature-length motion picture with synchronized dialogue in 1927 – is marked by a series of significant changes in production, distribution, exhibition and representational practices. Any account of commercial and creative innovation in silent film should therefore seek to resist homogenization of this complex history. Thus, the period c.1895-1906 is generally recognized as the "pioneering era", during which time the dominant aesthetic mode was the "cinema of attraction" (Gunning 1986) and films were typically shown as part of a varied program of entertainments at a range of venues, including fairgrounds, lectures, vaudeville theatres, local churches and music halls. A combination of factors then led to changes in exhibition and distribution practices mid-way through the first decade of the twentieth century. Between 1905 and 1906, specialized storefront exhibition spaces for films named "nickelodeons" began to multiply in the US.[21] In Britain, the moving pictures enjoyed a corresponding popularity boost around the same time, with the growth of "picture palaces", "electric theatres" and "bioscope theatres". The film historian Charlie Keil has defined the developmental phase in film-making between 1907 and 1913 as the "transitional" era, during which changes in distribution and exhibition were also accompanied by the evolution of editing practices. Thus, the gradual increase in the length of many films from one reel to two

[21] Various contemporary and historical estimates for the number of nickelodeons that sprung up across America during the period range between 2,500 and 8,000 by 1908. See Eileen Bowser, *The Transformation of Cinema 1907-1915*, University of California Press, 1994, pp. 4, 6.

reels, and eventually to multi-reel or "feature" films corresponded with the cultivation of more complex narratives.

The films I include throughout this thesis are drawn from a range of sources and locations, though all found audiences either in North America or Britain, or both.[22] A small number can be viewed online through platforms such as YouTube under Creative Commons licences, or can be purchased on commercially available DVDs. A larger number have not been digitized, and are held in the archives of the National Film Archive in London, the Library of Congress in Washington D.C. and Gaumont Pathé in Paris. It is my hope that this work of scholarship, together with any future studies that may lead from it, might facilitate further critical interest in, and increased access to, these forgotten and little-studied archival film materials. I analyze archival prints in their complete form wherever possible. However, where no surviving print has been identified, I have sought to reconstruct lost filmic texts with recourse to their archival traces. I have collated synopses, discussions, reviews and stills from contemporary film catalogues, from prominent trade journals such as *The Moving Picture World* (1907-1919), *The Bioscope* (1908-1932) and *The Kinematograph and Lantern Weekly* (1907-1919), and from fan magazines such as *Variety* (1905-present) and *Photoplay* (1911-1980).

As Charles Musser has observed, "exhibition poses a particular problem for the historian. No records survive for many, perhaps most, of the screenings that occurred in this early era. Tracing and assessing them is extremely difficult, and conclusions must be couched in tentative terms" (*Emergence* 9). These challenges notwithstanding, in recent years, early cinema scholarship has turned its attentions increasingly towards detailed investigations of particular exhibition and reception contexts. New archaeologies of regional film history have sought to uncover where and when particular films were screened, the specifics of live performance practices (such as lecturers and musical accompanists), and what the responses of contemporary audiences in these instances might have been.[23]

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[22] In my analyses of films released in both Britain and the US, I have sought to account for variations in representation, exhibition and distribution where relevant, whilst also highlighting their shared interests in the particular medical, cultural and economic discourses under discussion. There are considerable differences in the size and operations of British and American film industries in the first two decades of the twentieth century. Charles Musser notes that US production figures and the growth of new cinema spaces during Nickelodeon boom exceeded comparable expansions in Europe. See *The Emergence of Cinema: The American Screen to 1907, Vol.1*, University of California Press, 1994, p. 489.

[23] Recent examples of such audience-based scholarship include: Denis Condon's work on exhibition and reception practices in Ireland (e.g. see Condon, *Early Irish Cinema 1895-1921*, Irish Academic Press, 2008), research by Chris O'Rourke on the history of cinema exhibition in London, (see *London's Silent Cinemas*, University College London, www.londonssilentcinemas.com), the AHRC-funded project "Early Cinema in Scotland, 1896-1927", led by Professor John Caughie at the University of Glasgow (see *The Early Cinema in*

Although I have made efforts to search for and include such details wherever possible, a thorough investigation into the reception contexts of the films discussed, likely to involve extensive research in local archives located in both Britain and the US, lies beyond the scope of this project. In the absence of such empirical data, what is clear nonetheless is that contemporary responses to the early films I discuss are likely to have exceeded any singular intention on the part of the filmmaker or exhibitor. Cinema's growing popularity during the first quarter of the twentieth century attests to the unique reach and appeal of this particular medium. Filmmakers and audiences during the silent period are a heterogeneous category, comprising various socioeconomic groups and perspectives. The relatively low cost of entry to the pictures ensured the accessibility of film to a broad demographic, including female and working-class audiences, as well as ethnic minorities. Diverse audiences brought with them multifarious – and often unpredictable – interpretations of filmic content.[24]

Key secondary materials and thesis positioning in relation to these

Research focusing on the topic of energy in relation to the human body in the late nineteenth and early twentieth centuries is limited. Anson Rabinbach's 1990 study *The Human Motor: Energy, Fatigue and the Origin of Modernity* represents one of the few book-length studies in this area. Rabinbach argues that during the Second Industrial Revolution, "energy" was newly-defined as a technical concept; one that corresponded more closely than it had previously done with a definition as "the power of doing work".[25] Drawing on Marx's theorization of the relationship between the body and the mechanisms of capitalism, Rabinbach investigates the energy of the body in relation to the mode and conditions of economic production from the mid-nineteenth century onwards. For Marx, the new economic order resulted in the displacement of "labour" (a purely descriptive term referring

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Scotland Research Project, University of Glasgow, www.earlycinema.gla.ac.uk) and *The Sounds of Early Cinema in Britain* project led by Dr Julie Brown at Royal Holloway, University of London, 2008-2016, projects.beyondtext.ac.uk/soundsearlycinema.

[24] Miriam Hansen, for example, notes that early fight films, aimed primarily at male audiences, found popularity with female spectators for a different reason. See Hansen, "Adventures of Goldilocks: Spectatorship, Consumerism, and Public Life", *Camera Obscura*, vol. 8, no.1 22, January 1990, pp. 50-72. Film historian Luke McKernan's website *picturegoing.com* is an ongoing survey reproducing eyewitness testimony of viewing pictures, from the seventeenth century to the present day.

[25] The Second Industrial Revolution, or "Technological Revolution" (c.1870-1914) evolved from the industrial revolution begun in the eighteenth century. Driven by scientific and technical progress in the steel and chemical industries and in communications, it was also defined by new energy technologies such as the internal combustion engine and electricity. See Andreas Killen, "The Second Industrial Revolution", in *The Fin-de-Siècle World*, edited by Michael Saler, Routledge, 2014, pp. 45-58.

to the activity of work) by "labour-power" (an ideological construct denoting an individual's capacity to perform that work). Representing a corporeal energy economy of expenditure and replenishment, labour-power, according to Marx, "becomes a reality only by its exercise; it sets itself in action only by working". With this work, "a definite quantity of human muscle, nerve, brain &c., is wasted, and these require to be restored" (Marx 167). Drawing on Marx's analysis, Rabinbach argues that a new ideology of labour – one rooted in scientific scrutiny of the chemical and physiological mechanisms of muscular energy – emphasized the productive power of the body as a "human motor", which would power economic progress. Rabinbach outlines the ways in which this logic of "modern productivism" sought to systematize bodily capacity in the service of greater productivity and informed new strategies and experiments in medical science and economic management.

Rabinbach's book offers a rich account of labour practices during a period of accelerated economic and social change, tracing the "emergence of energy as the universal principle of work" (9) as it operated across the worlds of medicine, physiology and the European political economy. However, this account focuses predominantly on scientific, economic and philosophical sources, and does not consider discourses surrounding bodily energy, labour-power and modern productivism as they extended across a broad range of written and visual cultural materials at this time. This thesis therefore inherits Rabinbach's identification of the body as the site of potential and applied energies in the context of industrial capitalism, but works to uncover the cultural dimensions of this history across a wider base of primary sources. It argues that a study of bodily energy that encompasses both scientific and cultural forms can offer a richer understanding of the variety of agents and audiences which registered, reproduced and reimagined ideas and practices in this area.

Carolyn Thomas de la Peña's *The Body Electric: How Strange Machines Built the Modern American* is the only major study since Rabinbach's *The Human Motor* to have approached the history of the body in late nineteenth and early twentieth centuries with a specific interest in the topic of "energy". Thomas de la Peña's primary interest in the technologies of energy enhancement governs her overall thesis that this "popular enthusiasm for physical gadgets" reflected a broader epistemological process through which new forms of power were appropriated and familiarized through their intimate connections with the human body (2). She therefore argues that practices of energy enhancement involving muscle machines, electrical devices and radium treatments co-opted the body into the progress of modernity, directly connecting "unbridled technological optimism and industrial plenty" with the possibility of "full physical development" (3) and naturalizing habitual

interactions between humans and machines. Whereas Thomas de la Peña's book analyzes encounters between the body and re-energizing medical technologies within the American context, this thesis brings the medical and commercial histories of "energy cure" gadgets into critical conversation with a broader range of cultural materials, including literary and filmic fictions from both Britain and the US. In so doing, it situates such innovations and treatments as part of a broader spectrum of discourses surrounding corporeal regeneration, considers their ideological dimensions, and reveals the ways in which they were critically and creatively reimagined across a wider range of forms than those covered by Thomas de la Peña's enquiry.

Cultural materials occupy a more prominent role in Tim Armstrong's study *Modernism, Technology and the Body: A Cultural History*, than in the accounts offered by Rabinbach and Thomas de la Peña. Armstrong dedicates chapters of his book to bodily economies of electrical, caloric and seminal energies, tracing the links between specific medical theories and literary texts. His close-readings of modernist novels by canonical writers including W.B. Yeats, Henry James, Gertrude Stein, Dorothy Richardson, T. S. Eliot and Ezra Pound elucidate a "literary metaphorization of the body" informed by medical and technological modernity (19). More recently, Anna-Marie Zwierlein has considered the importance of discourses surrounding energy and productivity to the study of ageing during this period. In her essay "'Exhausting the Powers of Life: Aging, Energy and Productivity in Nineteenth-Century Scientific and Literary Discourses", Zwierlein highlights the influence of conceptualizations of "vital force" on both scientific and cultural perspectives on ageing. She suggests that "energy", understood as "the power of doing work", was "the leitmotif in an idealized, bourgeois version of old age throughout the nineteenth century" (48) and emphasizes its rhetorical power in discussions of ageing across scientific, journalistic and literary sources. Armstrong's attentiveness to the ways in which discourses of energy are textually inscribed, and Zwierlein's topical interest in energy and old age, both inform my own more expansive exploration of bodily energies in popular print culture and in silent film. Exploring and problematizing "energy" as a term and concept deployed in a wide range of contexts, my own project examines economic, medical, social and cultural investments in particular corporeal characteristics, and their ideological synergies and divergences.

Methodology

Interdisciplinarity

Gillian Beer has suggested that "there are particular kinds of cultural story that interdisciplinary work uncovers, stories which otherwise would lie latent or unconcealed" (*Forging* 1). This thesis approaches its topic through an interdisciplinary methodology in order to tell a particular story about widespread interest in corporeal energy across its chosen period. Juxtaposing and comparing primary and secondary sources typically categorized within distinct disciplinary remits (History of Medicine, Labour History, Literary Studies, and Film Studies), it opens up new perspectives across each of these areas and reveals previously undetected connections between them. This approach has illuminated previously unexplored associations across subject areas – those as apparently diverse as labour management, vagrancy laws, anti-ageing treatments and early comic cinema. My aim has been to illustrate the extensive scope of discourses on the topic of bodily energy and the lively interactions between the different contexts that informed these and the forms that represented them.

The British Academy's recent investigation into opportunities for, and barriers to, interdisciplinary research in the humanities and social sciences has underscored the capacity of this approach to produce more nuanced forms of knowledge. Rather than promoting "rigorous demonstration of cause and effect", it suggests, interdisciplinary research can facilitate efforts to "understand society as a complex system of physical, technological, environmental, social, economic, political and cultural processes and feedback loops" (*Crossing Paths* 22). Such an approach, with the potential to expand and deepen critical understanding of both historical and contemporary periods, is both pertinent and exigent in relation to the study of science and culture. Gowan Dawson has observed that historians of science "have increasingly contested the commonplace view of science as a grandiose system of objective rationality that simply 'discovers' self-evident and timeless truths". Consequently, these same historians of science, argues Dawson, are now entering into productive dialogue with scholars from across the humanities to explore the ways in which science is "to some extent, culturally conditioned" (303). Meanwhile, growing numbers of literary critics are incorporating scientific and medical materials and contexts into their analyses of fictional forms.[26] Scholarship on the nineteenth century continues to feature

[26] For an overview of literary scholarship engaging with science in this way, see Martin Willis, *Literature and Science*, Palgrave Macmillan, 2015. In addition, the *Journal of Literature and Science*, founded in 2007, invites essays on the subject of literature and science, broadly defined, incorporating scholarship on a range of

prominently in this regard. In a widely discussed article published recently in the *Journal of Victorian Culture*, the historian Peter K. Andersson invited fellow literary scholars of the period to engage more substantively with diverse theoretical perspectives and cultural materials, including the historiography of science, labour histories and visual forms. Applying the methodological procedures of literary studies and film studies – that is, rigorous textual analysis anchored in close readings - with a historicist emphasis on medical and scientific contexts, this thesis heeds that call.

Cultural materialism

Raymond Williams has drawn attention to "culture" as a perpetually dynamic process, comprising a series of stages, rather than a homogeneous or static term. He offers three categories for describing the forces at play at any one historical moment in shaping a culture: the "residual", "the emergent" and "the dominant" (*Marxism and Literature* 121-127). The "emergent" denotes the "new meanings and values, new practices, new relationships and kinds of relationship" that are "continually being created" in culture-as-process, but which circulate within it alongside more established ("residual") or ideologically-enforced ("dominant") elements (*Marxism and Literature* 123). This tripartite model is useful inasmuch as it circumvents yet another binary model which emphasizes the primacy of hegemonic forces. "Emergent" ideas can relate to their existing "residual" or "dominant" counterparts unevenly, from a position of mobility as opposed to fixity, so that "it is exceptionally difficult to distinguish between those which are really elements of some new phase of the dominant culture…and those which are substantially alternative or oppositional to it: emergence in the strict sense, rather than merely novel" (*Marxism and Literature* 123). Williams' account therefore allows for the "contradictions and unresolved conflicts" of these processes, proposing that "it is at the level of a whole culture that the crucial *interrelations*, including confusions and conflicts, are really negotiated" (*Marxism and Literature* 118).

In accordance with William's analysis, I have deliberately avoided the temptation to weave a narrative of "resistance" throughout this thesis, told only by cultural forms selected and analyzed for the ways in which they have disputed or subverted dominant discourses. Instead, I have sought to accommodate the traffic of residual, emergent and dominant ideas and to highlight some of the key characteristics of these discursive

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literary forms and artistic endeavours, including the novel, short fiction, poetry, drama, periodical literature, visual art, sculpture, radio, film and television. www.literatureandscience.org.

operations. As such, I consider primary materials in their multivalence, and acknowledge instances when they "renewed, recreated, defended and modified" the "lived hegemony" (*Marxism and Literature* 112). In ideological terms, the cultural forms examined in this study register various degrees of scepticism and enthusiasm in their shaping of specific ideas. In some cases, they expose unorthodox science and social prejudice, and in doing so, challenge dominant scientific, social, commercial and industrial discourses. At other times, they are complicit in the reinforcement, reification and perpetuation of those residual or dominant elements. On a number of occasions, they do both.

By seeking to demonstrate the ways in which cultural practices are bound up with systems of power operating through institutional, economic, social and commercial mechanisms, my account of bodily energy in medicine and culture takes a cultural materialist approach. It also shares this methodology's sensitivity to issues of marginality and omission, encompassing, where feasible and relevant, the histories of working-class and lower-middle-class individuals alongside those of the middle- and upper-classes. In combining these histories with analyses of gendered roles, narratives and representations, I seek to show that medical and cultural discourses relating to bodily energy operated across both social hierarchies and gender categories. In doing so, however, I seek to identify and narrate the particularities of each.

The ideological dimensions of the History of Medicine

Interdisciplinary approaches can be particularly instrumental in tracing the traffic of residual, emergent and dominant ideas described by Raymond Williams as they operate in the area of science and culture. Sara Wasson has noted the attentiveness of cultural studies of medicine to "dangers inherent within institutional discourses, marginalisation of disempowered demographics, and the often corrosive effects of capitalist pressures on medical practice" and its important work in identifying the "paradoxes, inconsistencies and ambiguities" associated with this (3). With this in mind, I turn attention here to some of the key institutional developments in medicine during the period covered by this study, and to their ideological dimensions.

Throughout the second half of the nineteenth century, significant advances were made in Britain and the US in the fields of bacteriology, immunology, physiology, pathology

and surgery.[27] Clinical practice became increasingly specialized, as medical learning was divided into separate spheres, and practitioners sought to become expert in certain branches of knowledge and treatment. By the turn of the twentieth century, the fields of psychiatry, neurology, gynaecology, paediatrics, obstetrics and gerontology were all formed, and others, including radiology and endocrinology, were also beginning to be recognized (Bynum 191-96). The number of practitioners increased in line with a growing population, and hospitals and other treatment facilities expanded accordingly. With the growth of the profession came changes to its administration and regulation. The American Medical Association was launched in 1847, with goals in scientific advancement, standards for medical education, a programme of medical ethics and improved public health ("The Founding of the AMA"). The British Medical Association (BMA), founded in 1856, played a key role in the establishment of the General Medical Council two years later, which organized a medical register and sought formal distinctions between qualified and unqualified practitioners (*Text of the Medical Act 1858*). However, despite progress in the professionalization of medicine, enterprising opportunists were still able to negotiate the boundaries of "legitimate" medical knowledge through their own practices. The Medical Act of 1858, for example, did not inhibit unorthodox practitioners from offering remedies whose efficacy was not proven, but merely prevented them from falsifying their training and qualifications. Fully qualified medical professionals who operated on a fee-paying basis thus continued to face challenges from a range of other practitioners offering alternative – and often cheaper – forms of treatment. This business in patent medicines was boosted by the expansion of the pharmaceutical industry, which marked the beginnings of large-scale manufacture and distribution of chemicals for therapeutic purposes (Bynum 164-8).

With the growth of commodity capitalism, the distinctions between orthodox medicine, unorthodox medicine and quackery became increasingly difficult to draw. Charlatans, mountebanks and opportunists operated a vast trade in patent medicines and self-medicating therapies, which encouraged patients to bypass medical consultation altogether and administer their own treatments. Some of these alternatives, offered variously by chemists, pharmacists and homeopaths, would be categorized quite firmly as "alternative" therapies by current standards, including naturopathy (herbal remedies), hydropathy (water cures) and mesmerism (hypnotism). Yet others of specific relevance to this thesis, such as

[27] W.F. Bynum observes "striking similarities between Britain and the United States in the varieties of medical practice, medical institutions and medical competition" at the end of the nineteenth century. See *Science and the Practice of Medicine in the Nineteenth Century*, Cambridge UP, 1994, p. 199.

electrotherapy (discussed in Chapters Two and Three), and later, "rejuvenation" therapies (explored in Chapters Five and Six), occupied a liminal space between legitimate science and pseudoscience. The fact that a range of orthodox and unorthodox practitioners alike endorsed these two particular forms of treatment testifies not just to the financial temptations of the medical marketplace, but to a climate of uncertainty surrounding concepts of energy and their relationship to the human body. It was within this climate, so central to the enquiries that follow, that practices such as electrotherapy and rejuvenation emerged, shaped by hypothetical and imaginative formulations generated collectively by medical professionals, quacks, and the wider public.

Foucault's account of the history of medicine as a narrative of institutional power exercised over individual bodies has been influential here: it has led to a critical awareness that although the interest of the medical sciences has primarily been focused on alleviating human suffering and curing disease, it has also been historically complicit in wider economic and political agendas (Foucault 1973). Clinical discourses have been one of a number of "disciplinary controls of activity". These "belonged to a whole series of researches, theoretical or practical, into the natural machinery of bodies; but they began to discover in them specific processes" so that "behaviour and its organized requirements gradually replaced the simple physics of movement" (Foucault, *Discipline and Punish* 156). Medicine, then, has produced new somatic knowledge shaped by particular ideologies. In its account of the "energy" of the human body, this thesis identifies medicine's discursive complicity with contemporary economic agendas and its embeddedness in hegemonic structures. At the same time, it does not position medicine-as-institution solely in antagonistic opposition to the individual subject or to counter-cultural discourses. To "describe the shadow side of medicine" is not to deny that "medicine is also a thing of light" (Wasson 3).

Thesis structure

The thesis is divided into two parts, each comprising three chapters. In **Part I**, I analyze discussions and representations of the human body as the site of "arrested" energies. **Chapter One** explores three categories of corporeal energy impairment: fatigue, neurasthenia (nervous exhaustion) and idleness. From the 1870s onwards, physical exhaustion was subject to new scientific scrutiny and experimentation. It was also medicalized within the category of "neurasthenia", a condition defined by lack of nerve force which became a common diagnosis across Europe and the US. Discussions surrounding fatigue and neurasthenia within the labouring classes were commonly accompanied by debates surrounding idleness. Here, I examine two specific formulations which connected

idleness directly to the indiscipline of the manual labourer – underwork and vagrancy – tracing their manifestations in medical writing, newspapers and periodicals, government legislature and silent film. In examining the categories of fatigue, neurasthenia and idleness together, I emphasize their shared ideological purpose: to problematize forms of corporeal inactivity.

Chapter Two explores two disciplinary solutions to the crisis of labour-power created by these forms of corporeal inactivity. The first section addresses the widespread popularity of electrotherapy treatments which targeted the fatigued and neurasthenic body, purporting to restore its internal energies through supplementation with external electric force. It brings scholarship on medical electricity from the History of Medicine into conversation with cultural histories, examining the shared ways in which medical, commercial and cultural forms exhibited widespread fascination with – and speculation about – electricity's effect on human physiology. The second section of this chapter investigates cultural materials pertaining to the practices of Taylorism, an economic philosophy of bodily motion which advertised its empiricist basis in physiological science as the index of its credibility. The rationalized movements of the labouring body it prescribed promised not just the elimination of fatigue, but a new means of engineering bodily energies which, according to its advocates, would be in the interests of both labour and capital. The final section of this chapter recalls the discursive construction of the idle vagrant outlined at the close of Chapter One, analyzing the appropriation of the tramp's unprofitable bodily energy through new legislation designed to put the tramp population to work.

Chapter Three draws upon the medical and economic practices outlined in the first two chapters to examine the ways in which a selection of cultural forms registered and reworked discourses on arrested energies. Here, I focus predominantly on early cinema as a creative space in which the disciplinary agendas of electrotherapy, Taylorism and anti-vagrancy legislation were playfully remade according to the generic conventions of the cinematic medium. My analyses converge on a number of early short comic fiction films released in Britain and the US between 1907 and 1911 in which the depleted energies of neurasthenics, "slow-workers" and tramps are restored through electrical stimulation. These films registered the discursive formulations of arrested bodily energies explored in Chapters One and Two, but they did not blindly reproduce them. Instead, their playful satirical visions of malfunctioning electrical technologies and frenzied labour constitute an aesthetic of energetic *excess*. The electrified subjects of these films are not characterized by passivity or

impairment, nor by purposeful activity. On the contrary, their anarchic physiological dynamism undermines symbolic authority and temporarily disrupts the social order.

Where Part I examines the "arrested" energies of the body, together with a number of strategies for, and visions of, corporeal regeneration, **Part II** considers the conceptualization of old age as a condition of "expended" energy and focuses on medical "rejuvenation" treatments which promised to restore the physical function and social value of senescent individuals. **Chapter Four** explores contemporary attitudes towards the productive and reproductive limitations associated with ageing. It integrates analyses of medical research on senescence with social and economic debates surrounding senile sexuality and the roles of older men and women in industrial society. I interweave these with close-readings of selected literary forms which variously registered and reformulated these narratives.

Chapters Five and Six offer analyses of "rejuvenation" as both scientific treatment and cultural fantasy and emphasize the ways in which these practices and representations were informed by contemporary gender ideologies. In the first quarter of the twentieth century, "rejuvenation" was used to refer to a variety of medical practices which sought to retard or reverse the ageing process and restore the body's energy and vitality. The development of rejuvenation drugs and surgeries for ageing bodies generated huge media and cultural interest in both Britain and the US. My analysis situates rejuvenation in relation to the economic interest in a youthful, able-bodied workforce, the social devaluation of old age, contemporary gender formulations and the accelerated growth of commodity culture. I argue that the understudied cultural phenomenon of rejuvenation offers significant new perspectives on the intersections of science and culture, and ageism and sexism, at the turn of the twentieth century.

The Afterword evaluates continuities and discontinuities across each of the six chapters and discusses some further directions for research emerging from this study. I emphasize the importance of future scholarship that engages with the conceptual metaphor of bodily energy and related discourses of work, fatigue, ageing and rejuvenation, together with the pressing need to map these ideological currents as they operate in the neoliberal present.

Part I

Part I comprises three chapters. Together, these illustrate a widespread concern with the body as the site of arrested energy, and the ideological strategies which sought to liberate this energy.

Chapter One, "Arrested Energies", examines three discursive categories from the period and their foundations in anxieties about the incapacitation and immobilization of potentially-productive bodies. Physical inactivity, brought on by fatigue, neurasthenia and idleness, was narratively conceptualized in ways which emphasized the availability and desirability of new solutions to such inactivity. Chapter Two, "Galvanized Energies", explores some of these solutions, examining the intersection of medical, scientific and economic agendas in three disciplinary regimes which targeted the human energy deficits identified in Chapter One. The first section addresses the widespread popularity of electrotherapy treatments which targeted the inactive body, purporting to restore its internal energies using external electric force. The second section investigates the regulation of the body's energies according to the practices of Taylorism, an economic philosophy of bodily motion which advertised its basis in physiological science as the index of its necessity. The third and final section of Chapter Two recalls the discursive construction of the tramp as idle pariah outlined at the close of Chapter One. It considers the appropriation of unprofitable corporeal energies through new legislation compelling the tramp population to physical labour.

The contextual analyses of Chapters One and Two form the necessary background for my readings of a selection of early short fiction films in Chapter Three, titled "Disruptive Energies". My analyses converge on a number of films released in Britain and the US between 1907 and 1911 which feature the comical acceleration of fatigued, "slow-working" and idle bodies through electrification. I identify early cinema as a creative space in which the disciplinary agendas of electrotherapy, Taylorism and anti-vagrancy policies were remade according to the early and evolving generic conventions of the new medium.

Chapter One

Arrested Energies

> "With this characteristic dejectedness of the degenerate, there is combined, as a rule, a disinclination to action of any kind, attaining possibly to abhorrence of activity and powerlessness to will (*aboulia*)."
>
> – Max Nordau, *Degeneration*, 1895, p.20

> "The energetic man, other things being equal, wins in the race for money, fame, usefulness; in this world every man receives practically full pay for the net average of his abilities. This is nature's law; no legislation avails for its repeal."
>
> – J.J. Stevenson, "Is This a Degenerate Age?", 1902, p.488

Degeneration

At the turn of the twentieth century, anxieties about biological and social decay pervaded Europe and the US. The publication of Max Nordau's *Degeneration* in 1892 epitomized intensifying concerns across the last decades of the nineteenth century about national decline and societal collapse.[1] Degenerationist thinking represented a particular set of fears intimately connected to biological ideas. Conceived as an embodied phenomenon, it found explicit expression in concerns about the deficient health of the average citizen. It emerged from the conditions and politics of modernity, informed by encounters with bodies deemed to be physiologically impaired or inferior: those clustered in urban slums, those found to be unfit for national service and those overwhelmed by the stresses and stimulations of modern life. The broad appeal of Nordau's book was rooted in its integrative aspect: the publication announced degeneration as a medical, social and cultural disorder, identifiable in the physical character of the human body and the output of its labours. Nordau had previously trained as a physician, and drew on contemporary

[1] The English translation of Nordau's book, published in 1895, ran to seven editions in six months. See "Degeneration by Max Nordau", *The British Library*, www.bl.uk. For more on the general popularity and controversy it generated, and its US reception in particular, see Linda L. Maik, "Nordau's Degeneration: The American Controversy", *Journal of the History of Ideas*, vol. 50, no.4, Oct-Dec 1989, pp. 607-23.

medical discourses of fatigue and nervous exhaustion to offer his account of social change.[2] It suggested that fatigue generated a "depression of vitality", which in turn contributed to the prevalence of neurological disorders (37).

For Nordau, degeneracy presented a moral challenge as much as a medical one. In the epigraph at the beginning of this chapter, Nordau identifies a particular type of inactivity characteristic of the contemporary degenerate: one dually defined as an impairment of the body and of the will. He cites "an enormous increase in organic expenditure" as a dominant element of industrialized modernity: "To speak without metaphor, statistics indicate in what measure the sum of work of civilized humanity has increased during the half-century." Humanity, he observes, has "not quite grown to this increased effort", but become "fatigued and exhausted" (39, 40). At issue here are the "dejectedness", "disinclination", "abhorrence" and "powerlessness" of individual men and women to contribute in meaningful ways to collective progress. Body and mind, Nordau argued, had been unable to keep pace with economic and social change.

The embeddedness of an economic agenda within the language of medical science in Nordau's book is representative of a more widespread correspondence between the discourses of economics and of medicine during this period. Addressing the question "Is This a Degenerate Age?" in the American magazine *Popular Science Monthly* in 1902, the geologist J. J. Stevenson struck a more positive note than Nordau, emphasizing the social and economic value of "the energetic man", who, "other things being equal, wins in the race for money, fame, usefulness" (see second epigraph, above). This energy is remunerated in mercantile advantage: "in this world every man receives practically full pay for the net average of his abilities." Under the new economic order "the small shopkeeper, who idled for half the day waiting for chance customers" would be displaced by his "energetic rival": in the dynamic free market of life, proactivity would supplant passivity (488).

In their assessments of depleted corporeal energies, and the necessity of their restoration, Nordau and Stevenson's texts form part of a broader set of discourses from the last three decades of the nineteenth century and the first two decades of the twentieth century which shared a common concern with inactive and underactive bodies. This chapter investigates discussions and representations of three particular conditions of

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[2] "Nordau earned a medical degree and became a practising physician." See George L. Mosse, Introduction: Max Nordau and His Degeneration, *Degeneration*, University of Nebraska Press, 1993, pp. xiii-xxxvi (p. xiii).

inactivity: fatigue, nervous exhaustion, and idleness. These conditions of somatic energy depletion were incompatible with modern productivism, which required the co-ordinated mobilization of bodily energies to power the progress of civilization. Existing scholarly accounts have tended to treat the histories of fatigue, neurasthenia and idleness separately. Here, I analyze their interrelationships and affinities as constructed categories of "arrested" corporeal energies to illuminate the scale and diversity of disciplinary regimes seeking newly purposeful and appetitive bodies at this time. From the mid-nineteenth century onwards, the physiological and psychological causes of the body's inhibited energies were subject to intensified scrutiny in a range of written and visual materials. The diminution of corporeal force implied in each case was conceived as a temporary state, remediable through scientific, commercial and legislative intervention. In the sections below, I trace the ways in which forms of medical enquiry, cultural production and social policy were shaped by an economistic logic[3] – one rooted in a thermodynamic conceptualization of the human body and its capacity for as-yet unrealized feats in the application of its vital powers.

Fatigue

Publishing in the *Lancet* in 1875, George V. Poore, Assistant Physician at Charing Cross Hospital, London, identified fatigue as a topic of growing concern within the medical profession. An inevitable consequence of work, and a ubiquitous phenomenon, fatigue, wrote Poore, manifested in various forms: "general" or "local", "acute" or "chronic". He described the state of "acute local fatigue" as "loss of power":

> By too frequent or too prolonged stimulation the irritability of muscular tissue becomes exhausted, and it either refuses to respond or responds feebly to the stimulus of the will; our power of adjusting the force of contraction to the act to be accomplished is lessened, and accuracy of movement and delicacy of co-ordination become impossible (163).

Poore observed that this temporary loss of functionality represented a particular problem with regard to the management of work and repose. Left unchecked, in its chronic form, fatigue represented "the prelude of definite and recognisable degenerative changes"

[3] Tom Lutz has pointed to "certain discourses at a national level which might be called economistic discourses, because of their economic rhetoric and logic". Lutz identifies neurasthenia as one such discourse, in so far as "one of its functions was to address fears of economic upheaval and create the sense of (or the desire for) the economic 'well-being' conductive to a consumption economy". See Tom Lutz, *American Nervousness, 1903: An Anecdotal History*, Cornell UP, 1991, xi-xii.

(163). Poore's taxonomy of fatigue represented one of a growing number of medical and scientific publications on overwork and exhaustion published from the 1870s onwards. Initial studies explored fatigue primarily in relation to muscular work and its connections to metabolic processes and the measurable demands of a particular task.[4] From the turn of the century onwards, however, this interest expanded. Fatigue was conceived along the twin axes of physiology and psychology, its causes and effects located in an indistinct combination of physiological and neural processes. Rabinbach notes that by 1900, "the U.S. Surgeon General's index listed more than one hundred studies of muscle fatigue, in addition to numerous studies of 'nervous exhaustion', 'brain exhaustion', 'asthenia' and 'spinal exhaustion' (20).

Informed by a thermodynamic perspective, fatigue was widely understood as the exhaustion of the body's energy supplies. This was the biological correlative to the principles of universal entropy, which stated that although the quantity of energy in a given system neither increased nor decreased, a portion of that energy became unavailable through its continuing operations. The loss and waste of bodily energy identified within this model was inimical to the new economic emphasis on unrestricted activity, augmented productivity and boundless progress. The regularization of labour practices throughout the nineteenth century marked the beginning of a new systematic emphasis on human task performance, and placed the labouring body under unprecedented pressures. Drawing on evidence from Royal Commissions, government reports and social critiques of working practices in nineteenth-century Britain, A.J. McIvor has shown that by the turn of the twentieth century, "industrial fatigue – a state of overstrain or exhaustion resulting from excessive work not being balanced by adequate rest and exhibiting itself primarily in diminished personal capacity for doing work" was "widely prevalent" (724). The *Report of the Interdepartmental Committee on Physical Deterioration* to the British parliament in 1904 identified "over-fatigue" as a consequence of the nature and conditions of factory work, and of health issues associated with poverty. It recommended "a strictly scientific enquiry" into its "physiological causation and effects" (87). Industrial demand for labour-power conceptualized fatigue as a negative state, understood primarily in terms of energy deficiency and operational shortcomings.[5]

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[4] See, for example, John Hughes Bennett, *Text-Book of Physiology: General, Special and Practical*, James Thin, 1872.

[5] Hockey's wide-ranging study *The Psychology of Fatigue: Work, Effort and Control* (Cambridge UP, 2013) offers a theory of fatigue as a physiological and psychological mechanism triggered in response to externally-imposed demands.

Emerging scientific and medical literature accordingly considered fatigue as a combinatory failure of physiology and willpower: both a legitimate representation of "the horizon of forces or energies within the body" – that is "the physiological limit of even the most perfectly executed work" – and as a state of intractability; "the chief sign of the body's refusal to bend to the disciplines of modern industrial society" (Rabinbach 39, 118, 38).

In 1904 – the same year that the British parliamentary committee issued its report and recommendations on "over-fatigue" – a seminal study of fatigue by the Italian physiologist Angelo Mosso was translated into English and published simultaneously in Britain and the US. As one of the most extensive investigations undertaken into the phenomenon, the publication of *La Fatica* (*Fatigue*) indicated the co-opting of the physiological sciences in the economistic drive to regulate bodily energies. Yet, in its assessment of the causes and mechanisms of fatigue, Mosso's study also attests to the discursive complexity of the participation of science and medicine in disciplinary management of the human body as an industrial resource. Mosso conceptualizes fatigue as "resistance to work" (92), and the primary interest of his study is in the quantification of expended energies.[6] However, he does not identify fatigue as a purely negative state. Instead, he emphasizes its function as a kind of biological safety mechanism which inhibits the possibility of total debility, noting that "The fatigue increasing more rapidly than the amount of work done saves us from the injury which lesser sensibility would involve for the organism" (156). Fatigue, Mosso argues, thus represented a useful alert to the legitimate boundaries of the body's capacity for work; the point beyond which external demands on the continuing application of its energy would prove damaging.

Mosso identified a number of factors determining the level of fatigue in any single individual, including lifestyle, diet, sleep and mental state (94). Yet, he also devoted two sections of his study to explicit economic critique, placing the intensified demands of modern industry in inverse proportion to physical health. The increasing velocity of industrial machines, he observes, has defined an acceleration of the means of production with which the worker must keep pace: "man is condemned to follow them without a moment's rest, because every minute wasted consumes time which is worth

[6] In his experiments, Mosso used an instrument of his own design called an "ergograph", to "measure exactly the mechanical work of the muscles of man and the changes which, as the effect of fatigue, may be produced during the work of the muscles themselves". See *Fatigue*, G.P. Putnam's Sons / S. Sonnenschein, 1904, pp. 83-88.

money" (171). Mosso argued that bodily energies remained crucial to the interests of both capital and welfare, and called for independent scientific research "free from all preconceptions whether political, humanitarian, or social" (172-73) to navigate the prevailing productivist vision of accelerated work-rates on the one hand, and the very real possibility of "a gloomy future…full of the most grievous fatigue" (169) on the other. Mosso's text is unusual in the overt connections it makes between fatigue and modern productivism. But the confidence it expressed in the vincibility of fatigue under the empiricist investigations of science was a characteristic of another predominant conceptualization of arrested energies during this period: neurasthenia, or nervous exhaustion.

Neurasthenia

In April 1880, the American neurologist George M. Beard pronounced "neurasthenia" to be a new diagnostic category.[7] The following year, he published a volume on the topic titled *American Nervousness: Its Causes and Consequences*, this time aimed at a readership beyond the scientific sphere (iii-iv). Derived from the Greek, it referred to a "lack of nerve-force" (vi) and according to Beard, represented "the most frequent, the most important, the most interesting nervous disease of our time" (xi). Beard observed the increase in the number of cases of nervous exhaustion since the mid-nineteenth century (20), and insisted on the somatic basis of the disorder, which in turn, he claimed, adversely affected the mind (17). The expansive range of symptoms Beard outlined within this diagnostic category clearly distinguished it from the condition of muscular debility with which the condition of fatigue was primarily associated by Poore and Mosso. This catalogue included; headaches, insomnia, localized pains, heart palpitations, involuntary muscle spasms, convulsive movements, cramps, impotence and urinary incontinence, together with the more subjective conditions of "mental irritability", "hopelessness" and "fear of society" (*American Nervousness* 7). Between 1870 and 1910, an estimated 330 articles were published on neurasthenia in America by a total of 250 physicians (Schuster, *Neurasthenic Nation* 36). Beard defined the disorder primarily as a

[7] Schuster cites the two publications published in April 1869 which claimed the discovery of neurasthenia as a new disease: Beard's "Neurasthenia, or Nervous Exhaustion", *Boston Medical and Surgical Journal*, vol. 80, April 1869, pp. 217-21 and Edwin H. Van Deusen's article "Observations on a Form of Nervous Prostration, (Neurasthenia), Culminating in Insanity", *American Journal of Insanity*, vol. 25, no. 4, April 1869, pp. 445-61. See *Neurasthenic Nation: America's Search for Health, Happiness and Comfort, 1869-1920*, Rutgers UP, 2011, pp. 7-8 and note 2, p.168.

condition affecting the American population, whilst suggesting that the epidemic of nervousness was also extending into Europe (*American Nervousness* 14).[8]

Medical interest in the clinical characteristics of nervous illness has a long history – the symptoms of physical and mental exhaustion described in *American Nervousness* were not new.[9] But neurasthenia represented a unique discursive formulation of fatigue within the medical and cultural imagination. It was articulated according to contemporary instantiations of class, race and gender bias, and mutually produced by physicians, patients and a range of media and cultural materials. By 1894, the preface to a new edition of Beard's *Practical Treatise on Nervous Exhaustion* reflected the pervasiveness of the concept across medical and cultural spheres. "Neurasthenia", it reflected, "is now almost a household word" (3).

As conceived by Beard, neurasthenia was as much a social commentary to explain observed phenomena as it was a medical category. Chapter Five of *American Nervousness*, entitled "Physical Future of the American People", registered the extraordinary influence of discourses surrounding evolution, race and degeneration, together with the scale of claims made about supposedly-depleted corporeal energies. Here, Beard's rhetoric identified neurasthenia not just as an index of individual physical health, but as the measure of a successful civilization. His prognosis for the American nation bears the hallmarks of an energetic paradigm operating in the service of an economistic narrative. Beard expressed the opinion that "the physical future of the American people has a bright as well as a dark side" (ix). According to his progressive vision, the "typical American of the highest type" would learn to apply his own energy in the most efficient way possible: "with more of wiriness than of excess of strength, and achieving his purposes not so much through the amount of his force as in wisdom and economy of its use" (346). Like the contemporary scientific assessments of physiological fatigue in the context of work practices, Beard's concept of neurasthenia operated according to a thermodynamic understanding of the body's chemical and nervous

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[8] Although the number of British publications dealing explicitly with the disorder was far outweighed by those circulating in the US, Simon Wessely has drawn attention to the correspondence columns of the *British Medical Journal* and the *Lancet* as an indication that neurasthenia "was certainly being discussed and diagnosed" in Britain. "Old Wine in New Bottles: Neurasthenia and ME", *Psychological Medicine*, vol. 20, no.1, February 1990, pp. 35-53 (p. 48). Notable publications on neurasthenia by British physicians include: Thomas Stretch Dowse, *On Brain and Nervous Exhaustion: "Neurasthenia", its Nature and Curative Treatment*, Baillière, Tindall, and Cox, 1880 and Thomas Dixon Savill, *Clinical Lectures on Neurasthenia*, 3rd Ed., H.J. Glaisher, 1889.

[9] See E. Hare, "The History of Nervous Disorders from 1600 to 1840, and a Comparison with Modern Views", *British Journal of Psychiatry*, vol. 159, no.1, July 1991, pp. 37-45.

energies which held effective management of these forces as the key to individual welfare – and thereby to collective regeneration.

Beard's publication anticipated Nordau's exposition on the condition of late nineteenth-century Western civilization by more than a decade, yet the two texts shared the same combination of diagnostic pessimism and prognostic optimism.[10] Both also identified the centrality of the human body to regenerative projects. In Britain, an Editorial piece on *American Nervousness* published in *The Times* picked up the thread of Beard's theory, situating the ongoing epidemic of neurasthenia within a broader narrative of industrial progress which placed renewed emphasis on the functionality of bodily mechanisms. "When the progress of civilization calls for the performance of a new function, whether it be of body or mind", the article concluded, "a new engine must be gradually provided for the purpose" ("We Published on Wednesday" 7). The passive phrasing of this final line functions as an invitation to new forms of corporeal regeneration, though the question of agency – that is to say, who, or what, would "provide" this – is unclear. Meanwhile, Nordau framed a necessity for corporeal regeneration within an irresistible narrative of evolutionary progress. His prognosis for humanity emphasized the potential of the self-modifying body: "As long as the vital powers of an individual, as of a race, are not wholly consumed, the organism makes efforts actively or passively to adapt itself, by seeking to modify injurious conditions" (540). Future prosperity would be driven by the "organic capacity" of the regenerate man (550).

Alongside discussion and theorizations in the medical press, and in popular science publications, a growing literature on nervous exhaustion emerged in a diverse range of forms, including short stories, novels, diaries and autobiographies.[11] Margaret Cleaves' *The Autobiography of a Neurasthene*, published in 1910, demonstrates the extent to which the rhetoric of re-energization pervaded both medical and personal

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[10] The final book of *Degeneration*, titled "The Twentieth-Century", offers suggestions for rectifying current problems (University of Nebraska Press, 1993, pp. 536-60).

[11] Representations of nervousness and neurasthenia in nineteenth-century American and British fiction by writers including Charlotte Brontë, Kate Chopin, Wilkie Collins, Theodore Dreiser, George Eliot, William James, Henry James, Edith Wharton, Charlotte Perkins Gilman, George Gissing and Thomas Hardy, have been discussed by Lutz in *American Nervousness*; in Janet Oppenheim's *"Shattered Nerves": Doctors, Patients and Depression in Victorian England*, Oxford UP, 1991, in Schuster, "Personalizing Illness and Modernity: S. Weir Mitchell, Literary Women, and Neurasthenia, 1870-1914", *Bulletin of the History of Medicine*, vol. 79, no. 4, Winter 2005, pp. 695-722, in Schuster, *Neurasthenic Nation* and in Jane Wood, *Passion and Pathology in Victorian Fiction*, Oxford UP, 2001.

understanding of the embodied state of exhaustion. George W. Beard's estimation that his fellow physicians made up approximately one-tenth of the clientele he treated for neurasthenia (*Practical Treatise on Nervous Exhaustion* 111), and his own self-identification as a sufferer, illustrate the complexity of the discursive forces which governed categories of health and illness during this period. If, as Foucault has argued, medical authorities have been the chief "investors" and "transmitters" of "the mechanisms of power that frame the everyday lives of individuals" (*Discipline and Punish* 77), then their own agencies have not been inviolable.

In her autobiography, Cleaves, a New York-based doctor, recounted her experiences with neurasthenic symptoms throughout her life, observing that the condition brought patients – herself included – "face to face with life's most interesting problem, the conservation of energy" (9). Cleaves attributed the "travail and anguish" of sufferers to the "complete exhaustion of their stored-up energy and temporary inability to function as generators of energy" (19). Such a state, she wrote, is often reached through the "tremendous expenditure of energy in meeting the requirements of professional work" (22). Marked by the "stern sense of duty" characteristic of her "Puritan ancestors" however (59), Cleaves adhered to a work ethic expressed in terms of the purposeful application of bodily energy. "Energy that is usefully directed usually is productive of good", she argued, "but energy that is permitted to run to waste or to follow lines of least resistance as in the mountain torrent, may be and usually is productive of mischief to a greater or less extent" (154). Throughout her autobiographical account, nervous debility features as an interim condition within a broader narrative of willed corporeal transformation. The human nervous system is a hub of quiescent energies awaiting renewal. "There is a residual energy in the neuron", she reasons, "which has not yet undergone complete degeneration that may by appropriate stimulation and education be aroused to activity" (196). Cleaves' account registers the optimism of the broader discursive projects of regeneration within which it is embedded – those which identified bodily energy as a new economic resource to be judiciously harnessed. Her observation that "nerve energy may be stored, transmitted and recorded" expresses the physician's commitment to the replenishment of the body's vital forces through close management and control (208).

A number of studies investigating the medical and social histories of neurasthenia in both the US and British contexts have suggested its distinctiveness as a

category of exhaustion defined by, and applied to, the middle and upper classes.[12] Such criticism has illustrated its usefulness in legitimizing the physical inactivity of the leisured classes, whilst disregarding "specific abuses in the living and working conditions of the masses" (Oppenheim 103).[13] Beard's work provides the foundation for this reading. In *American Nervousness*, he distinguished between "brain-workers" on the one hand and "muscle-workers" on the other (202). "Brain-workers" was a label he applied to a professional and managerial demographic broadly defined as "scientists, physicians, lawyers, clergymen, orators, statesmen, literati and merchants" – overworked middle-class professionals of the sort exemplified by Margaret Cleaves. "Muscle-workers" he categorized as "those classes who live mainly by routine and muscular toil", comprising "mechanics, artisans, laborers, etc." Contrary to the logic implied by his emphasis on the somatic basis of neurasthenia as "a physical, not a mental state" (*American Nervousness* 202-203, 196, 17), Beard made the surprising revelation that it was brain-workers, not muscle-workers, who were the most susceptible to neurasthenic illness. The causes of neurasthenia he identified reflected this demographic orientation: the technological advances of the periodical press and the telegraph, he argued, along with the progress of science and new "civil, political, religious, social and business" agendas, combined to create new physical and psychological pressures. Beard's assessment of industry-related fatigue thus occluded the labouring bodies of "muscle-workers", emphasizing instead the strain of economic competition faced by brain-workers exposed to "sources of anxiety" associated with "enhanced…risks of business" within the expanding operations of agriculture, manufacturing and trade (*American Nervousness* vi, 116).

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[12] Neurasthenia has received considerable critical attention to date. Barbara Sicherman and D.G. Schuster both emphasize the usefulness of neurasthenia's diagnostic elasticity, which legitimated both the subjective experience of the patient and the authority of the physician in managing this. See Sicherman, "The Uses of a Diagnosis: Doctors, Patients and Neurasthenia", *Journal of the History of Medicine and Allied Sciences*, vol. 21, no. 1, 1977, pp. 33-54 and Schuster, *Neurasthenic Nation*. F.G. Gosling's 1987 quantitative study of how the concept was taken up within the American medical community considers the 332 articles published on the topic between 1870 and 1910 and demonstrates the diversity of patients under the diagnosis. See Gosling, *Before Freud: Neurasthenia and the American Medical Community, 1870-1910*, University of Illinois Press, 1987. Meanwhile, research focused on Britain has explored the etiology of neurasthenia as part of a broader language of nervous disorders in Victorian and Edwardian Britain (Oppenheim, *"Shattered Nerves"*), and the participatory role of professional medicine in its formulation: Chandak Sengoopta, "'A Mob of Incoherent Symptoms?' Neurasthenia in British Medical Discourse, 1860-1920", in *Cultures of Neurasthenia from Beard to the First World War*, edited by Marijke-Gijswijt Hofstra and Roy Porter, Rodopi, 2001, pp. 97-116.

[13] Similarly, Lutz argues that "Neurasthenia helped some newly upper-class Americans, swelling from the wealth created by industrialism and expansion, accept a leisure class at odds with the still-dominant work ethic" (p.25).

Gosling, Sicherman, and Schuster (*Neurasthenia Nation*) have each drawn upon medical case-records to offer more nuanced class-based analyses which suggest that neurasthenia gradually extended beyond the demographic parameters initially established by Beard in the 1880s. This scholarship indicates that by 1900, neurasthenia was a common diagnosis in working-class patients treated in medical colleges, outpatient clinics and state hospitals in the US, including those in San Francisco, Boston City and Massachusetts.[14] My own account of neurasthenia across the three chapters of Part I in this thesis emphasizes the role played by contemporary popular science and popular culture in facilitating this expansion. Analyses of neurasthenia which pay attention to the ways in which nervous exhaustion was conceived and perpetuated in the medical and cultural imagination can enrich understanding of neurasthenia's appeal and currency to "muscle-workers" as well as "brain-workers".

Writing in the British magazine *The Contemporary Review* in 1895, the physician T. Clifford Allbutt dismissed the belief that neurasthenia solely afflicted brain-workers as "the prepossession of consultants occupied with the middle and upper classes of society" (741). Allbutt's revisionist assessment was echoed a few years later in a series of lectures on the topic given at the Paddington Infirmary and the West End Hospital by Thomas Dixon Savill, consulting physician to the West End Hospital for Diseases of the Nervous System. Savill drew on the work of the French neurologist Jean-Martin Charcot to suggest explicit connections between neurasthenia and the drudgery of the labouring classes, observing that "With physical fatigue, poverty and the constant anxiety to make both ends meet, one finds a combination which is as potent a factor in the production of nerve-exhaustion as the purely brain work of professional or business men" (129). Charcot himself had previously insisted on the widespread prevalence of neurasthenia across class boundaries: "Il ne faut pas oublier d'autre part que l'hérédité nerveuse n'est pas l'exclusif privilège des grands de la terre: elle exerce son empire sur la classe ouvrière comme partout ailleurs" (ix). "Les grands" could not claim nervous exhaustion for their own: "la classe ouvrière", too, he suggested, suffered from this very same pathological inactivity.

First published in 1899, Savill's lectures proved so popular that a fourth edition was released to meet continuing demand a decade later ("Dr. Thomas Dixon Savill"). A

[14] Schuster's case study of Cooper Medical College in San Francisco focuses on surviving medical records indicating that working-class outpatients were treated for nervous disorders. See *Neurasthenic Nation*, pp. 87-90.

letter in *The Times* the year after this reprint was published suggested that whilst debates about the causes of nervous disorders might be ongoing, their effects were indeed felt across the whole social spectrum: "Without attempting to decide whether mental labour or manual is the more likely to lead to nervous breakdown…the fact remains that nervous exhaustion, true 'neurasthenia', does frequently occur among manual labourers" ("Rest Cures for the Poor"). By the turn of the century medical and popular perceptions of neurasthenia as a pathological energy deficiency encompassed the labouring classes, as well as the leisured, and included both physical and mental fatigue. As initially applied to the middle classes, neurasthenia represented the acceptable face of physical inactivity as a medical condition, rather than a deficiency of will. However, the extension of the diagnosis to encompass the labouring classes corresponded with renewed discursive emphasis on idleness. The arrested energy of the industrial worker was increasingly attributed to a moral deficiency, rather than to genuine somatic illness.

Idleness

In his overview of formulations of idleness in religious, political and philosophical writings throughout the eighteenth and early nineteenth centuries, Rabinbach places the discourses of idleness and fatigue in inverse proportion, arguing that by the turn of the twentieth century, idleness had been gradually supplanted by the new scientific and medical formulations of diminished labour-power (35). His insistence on "the disappearance of idleness" (25) however, does not account for the surge in debates and discussions on the topic across a range of popular medical and cultural materials published in Britain and the US in the late nineteenth and early twentieth centuries. In fact, idleness did not recede from public discourse during this period. It acquired a new moral and social coding as a cognate of fatigue: one which highlighted its incongruity with the new value accorded to industriousness. Contrary to Rabinbach's assessment, the continuity and discursive evolution of idleness are particularly visible in two formulations which connected it directly to the discipline of work: underwork (including malingering), and tramping.

Underwork

That neurasthenia primarily offered a means of rationalizing the incapacities of modern "brain-workers", as opposed to "muscle-workers" is particularly evident from a surge in debates surrounding "malingering" – the practice of feigning or exaggerating illness to

escape work or obtain financial compensation.[15] The introduction of employers' liability and industrial sickness legislation in Britain and the US in the first decade of the twentieth century was accompanied by concerns about the appropriation of fatigue and neurasthenia by the workforce as pretexts for unproductivity and financial opportunism. An article in *The Times* published in 1911 discussing the effects of the 1906 Workmen's Compensation Act noted that neurasthenia had been "a rare disease until [the act] came into force", whereas "it has now become very common", adding that "[t]here can be little doubt that it encourages a new kind of *maladie imaginaire*, forms of disease curable only by an annuity or some other form of pecuniary compensation" ("Indirect Effects"). The following year, the newspaper reported that "the amount of malingering among compensated workers is enormous" and "increasing by leaps and bounds". It again cited neurasthenia as a particularly troublesome category in this context, and called for the introduction of financial incentives for more doctors "practising among the working classes" to root out individual cases ("Medical Benefit").

In 1912, the surgeon C.H. Buckley told a meeting of the British Association of Managers of Textile Workers in Manchester that malingering occurred "in every age, in every country and in every class", but that actions for damages brought particular "moral degradation" on the working classes ("Malingering – A Medical View"). He also warned that corporations and large employers of labour stood to lose out the most. The topic was discussed fervently amongst delegates at a formal meeting of the British Medical Association held in Brighton the following year. Reporting on the climate of opinion, *The Manchester Guardian* stated that "The majority declare that malingering is very rife, and complain that the profession is powerless to prevent it" ("Doctors and Malingering"). An economistic emphasis on industriousness threw a new spotlight on the integrity of chronic illness amongst labourers, and constructed malingering not just as moral failing but as physiological, and so economic, fraud.

Beard's formation of neurasthenia had emphasized the pathological effects of overwork as the primary cause of middle- and upper-class malaise. The medical establishment and popular press shared an interpretation of malingering as the illegitimate appropriation of these discourses by idle portions of the working classes. This assessment was reified in the industrial commentator Frederick W. Taylor's exposition on the under-deployment of physical energies in the context of labour. He defined "underworking" or

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[15] Original usage referred primarily to soldiers and sailors. See "Malinger, v.", *OED Online*, Oxford UP, March 2016.

"systematic soldiering" as the practice of "deliberately working slowly to avoid doing a full day's work". This phenomenon, he argued, represented "the greatest evil with which the working people of both England and America are now afflicted": it curtailed output and inhibited the prosperity of the nation (*Principles* 13, 14). In a speech titled "Shop Management" delivered before a meeting of the American Society of Mechanical Engineers in 1903, Taylor characterized the individual worker as instinctively indolent:

> There is no question that the tendency of the average man (in all walks of life) is toward working at a slow, easy gait, and that it is only after a good deal of thought and observation on his part or as a result of example, conscience, or external pressure that he takes a more rapid pace. There are, of course, men of unusual energy, vitality, and ambition who naturally choose the fastest gait, who set up their own standards, and who work hard…But these few uncommon men only serve by forming a contrast to emphasize the tendency of the average (*Shop Management* 1349, also quoted in *Principles* 19).

Taylor's "average man", predisposed to a life of languor and loafing, corresponds closely to Nordau's degenerate individual "disincline[ed] to activity". Both writers attribute such a disposition to a fundamental deficiency of will. They also envisage necessary projects of corporeal regeneration to develop the full potential of civilization. Nordau argues that those lacking in bodily energy, "capable of no useful individual effort and still less of a common labour which demands obedience, discipline, and the regular performance of duty", are evolutionary misfits, doomed to obsolescence. Only a new generation of the "healthy" would adapt to the new demands of modernity "with nerves of gigantic vigour" (540, 541), and – like Stevenson's "energetic man" – would flourish in all ventures. The key to this process of regeneration, as Nordau conceived it, was a committed industriousness: "Whoever preaches absence of discipline", he claims, "is an enemy of progress" (560). Taylor's vision of economic and social transformation is rooted in the same ideology of personal enterprise, but offers a more regulatory and prescriptive means by which it can be achieved. Whereas Nordau explores his preoccupation with degeneracy amongst the intellectual elite, Taylor focuses on the inefficiency and unprofitability of the labouring classes. The principles of close workplace supervision he proposed expressed his assurance that the productive endeavours of the labouring body could be reactivated through the interventions of an external disciplinary force which would

metamorphose workers into "men of unusual energy, vitality and ambition" equipped to fuel the growth of the free market.[16]

Tramping

The discourses of malingering and underwork constructed a new identity for the industrial worker as a locus of arrested energies – lethargic, inefficient and disingenuous. They drew on these associations from an already-established social category: the tramp. If the malingerer and the "slow-worker" represented obstacles to productivity in the workplace, the tramp presented the more fundamental problem of eschewing the spaces of organized labour entirely. Although vagrancy has a long history, it acquired a new visibility in the early nineteenth century, as urbanization and industrialization created a displaced population. Britain responded to the scale of the problem in 1824 with a new law which effectively criminalized the condition of vagrancy as an antisocial act in itself (*An Act for the Punishment*). However, critical consensus identifies the 1870s as the decade in which discourses on vagrancy in the US were magnified by the expansion of the railroads and economic depression. This enhanced publicity for the issue also generated corresponding interest in Britain.[17] American society had its basis in freedom of movement: the mobility of the early pioneers held a powerful place in the cultural imaginary, and found romantic expression in the figure of the roving cowboy.[18] Industrial progress, however, required the stabilization and consolidation of the American population. Under the directives of modern productivism, itinerancy – though formerly aligned with intrepidity and pioneering – was newly defined as a social problem.

In the closing decades of the nineteenth century, the word "tramp", previously used as a verb to denote walking or travel from one place to another, was first introduced

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[16] Taylor states that "the elimination of 'soldiering' and the several causes of slow working" would lead to the growth of both home and foreign markets, placing the US and Britain in a better position of competition with their economic rivals. See *The Principles of Scientific Management*, Harper and Brothers, 1911, p. 15.

[17] See Tim Cresswell, *The Tramp in America*, Reaktion Books, 2001, pp. 23-47; Kenneth L. Kusmer, *Down and Out, on the Road: The Homeless in American History*, Oxford UP, 2001, pp. 38-39; Christine Photinos, *The Tramp in American Literature*, 1873–1939, *AmeriQuests,* vol. 5, no. 1, February 2008, pp. 1-8 (p. 1). Cresswell identifies two periods of economic depression in the last quarter of the nineteenth century relevant to the history of vagrancy, in 1873, and 1893-94, respectively (p. 36, pp. 37-38). He also notes that "By 1876 news of the rising panic had reached Britain" (p. 9).

[18] Owen Wister's novel *The Virginian* (Macmillan, 1902), following the journey of an unnamed narrator from the east coast to Wyoming, is commonly cited as the first literary western.

as a noun used to describe an unemployed homeless person.[19] Tim Cresswell has elucidated the varying terms in use during the period and the nuances of the distinctions commonly made between them. In emerging sociological discourse, the term "bum" was used to denote a stationary homeless person who does not work and begs for a living. "Tramps" and "hobos" moved from place to place: whilst "hobos" were often classified as migratory workers, "tramps" were perceived to renounce all forms of employment, often through laziness (48-50). The majority of tramps were in their twenties, thirties or forties and unmarried. Most were semiskilled or unskilled manual workers, and large numbers were immigrants.[20] Beyond these shared characteristics however, they comprised a diverse group, containing those forced into a life on the road by circumstance; those intermittently employed in casual or seasonal labour; those who had voluntarily opted-out of the increasing constraints of industrial working life; and then, in addition, the opportunists, the criminals and the downright lazy. If mobility was a defining characteristic of the tramp, his[21] social identity was also often explicitly connected to discourses on the individual's capacity – and duty – to work. The treatment of the tramp in political, social and cultural contexts at this time is therefore expressive of dominant attitudes towards the social and economic value of individual bodies. The tramp's itinerancy and perceived shiftlessness were conspicuously incongruent with the industriousness and self-discipline espoused by the likes of Nordau and Taylor. Unlike those incapacitated by fatigue or neurasthenia, the tramp's torpor had no medical justification. His independence and self-reliance outside the dominant economic framework represented a symbolic impediment to capitalist progress.

Thus, in social commentary, the tramp was frequently subject to negative scrutiny. Some contemporary estimates placed the number of tramps in America as high

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[19] Paul T. Ringenbach cites one of the earliest uses of the word as a noun with this new sense in an 1875 article in *The New York Times*. See *Tramps and Reformers, 1873-1916: The Discovery of Unemployment in New York*, Greenwood Press, 1973, p. 4.

[20] See John C. Schneider, "Tramping Workers, 1890-1920: A Subcultural View", in *Walking to Work: Tramps in America, 1790-1935*, edited by E.H. Monkkonen, University of Nebraska Press, 1984, pp. 212-34 (pp. 213-17).

[21] In examining the figure of the tramp primarily in an industrial context, I focus on the male tramp. Though a portion of the homeless population in both the US and Britain was female, Kusmer notes that the gender ideology of the era led to more institutional provisions for housing unemployed or destitute women (p. 9). The UK Vagrancy Act of 1824 and similar anti-vagrancy legislation passed in the US in the 1870s explicitly excluded women from the definition of "tramp". See *An Act for the Punishment of Idle and Disorderly Persons, and Rogues and Vagabonds, in England 1824*, George IV, Chapter 83, London: George Edward Eyre and William Spottiswoode, 1862, pp. 697-706. The history of female vagrants in America is explored in Cresswell (pp. 87-109) and in Lynn Weiner, "Sisters of the Road: Women Transients and Tramps" in *Walking to Work* (ibid), pp. 171-88.

as three million, within an overall population of forty million (Ringenbach 11). *The New York Times* reported in 1875 that the majority were not "honest laborers in quest of work, but knaves who have determined, if possible, to live without it" ("The Tramp"). An Editorial piece in the American literary periodical *Scribner's Monthly* published in 1878 echoed this. In renouncing the figure of the vagabond as a "great burden of voluntary, vicious and even malicious pauperism" – a threat to community cohesion and public safety in his readiness "to join any mob that will give [him] the slightest apology for pillage" – its character sketch conjoined a sense of wilful abjection with criminal delinquency. In scorning work, it claimed, the tramp "count[ed] himself permanently out of the productive and self-supporting forces of society" ("Once More the Tramp" 882-83). Elsewhere, a pathologizing rhetoric assessed a lifestyle without work to be symptomatic of physical and mental degeneration. A correspondent for *The Manchester Guardian* estimated the British population of tramps to be 10,000 in 1904 and ever-growing, and couched this social phenomenon in the language of biology:

> To stand in Market-street and watch the streams of people go crowding by is like watching the circulation of the blood under a powerful microscope. These busy multitudes are cells – cells in the body politic! Examine them. Most are busy and evidently have work to do, but here comes one who looks as if he was borne along by the stream aimlessly…What if he is a microbe of evil? Shall we let him pass undetained to breed his kind? ("The Tramp").

Here, society is conceived in corporeal terms: the denizens of a busy market are figured as individual cells, together constitutive of the life-blood of civilization. Labouring cells supply the body politic, but those lacking direction or purpose not only fail to contribute to the healthy functioning of the system, but represent an active threat of disease, a contaminating influence which, if unhindered, would replicate itself and overwhelm the wellbeing of the nation. A speech given at a Poor Law Conference in Chester in 1906 similarly emphasized the apparently degenerate condition of the tramp in devolutionary terms, pronouncing that he had "a shuffling gait, like an anthropoid ape" ("2,500 Years of Tramps"). In its concluding lines, the speech shifted seamlessly from the language of pathology to that of economic expediency: "Every tramp in England is kept by the community as a 'gentleman at large'. From the points of view of economy, expediency, and self-preservation, it will pay to have a radical national system of making him work for his living".

Such economistic rhetoric, characteristic of much social commentary about tramps in the late nineteenth and early twentieth centuries, is forcefully exemplified by a fiscal assessment of "The Tramp Problem" conducted in a 1906 study. Estimating the number of tramps in the US to be around half a million, it suggested that tramps cost the country $100,000,000 annually. Reporting the findings, *The Washington Post* emphasized the disproportionate financial burden imposed by these "swarms" of "trespassers" and "marauders" upon the average American citizen: "One dollar and eight cents a year is spent for every man, woman and child in the country to maintain the army of those who will not work" ("What Tramps Cost Nation"). This calculation, the paper added, excluded the additional unknown costs incurred by damages, theft, amounts raised through begging, and expenditure on incarceration. This quantifying rhetoric is rooted in a conceptualization of vagrancy as an uncontrolled economy of human potential, one which not only operates independently of the prevailing directives of production and consumption, but which also represents a fiscal liability. It reconstitutes the tramp's passivity as an active threat – and insult – to financial responsibility.

Moral, medical and economic debates about vagrancy in the periodical and popular press were part of a broader interest in tramping which extended across popular culture. Interest in the figure of the tramp manifested in a range of literary genres (essay, novel, short story, autobiography), in theatre, and from 1895 onwards, in the new medium of cinema.[22] The cinematic tramp would of course be defined by Charlie Chaplin's roguishly lovable "little tramp", an incarnation that enjoyed international popularity across from 1914 onwards.[23] Yet, the vagrant was a familiar screen presence in the years preceding this, during which all major French, British and American production companies released films featuring the figure of the tramp.[24] Film historian David Robinson has described tramp films as an example of one of the earliest unplanned or "comic series" in cinema: at least forty films classifiable under this category appeared

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[22] See Cresswell, pp. 130-70 and Kusmer, pp. 169-91.

[23] Musser identifies Chaplin's debut tramp performance in *Kid Auto Races at Venice* (1914) as "a fuller, more nuanced depiction that breaks with…earlier screen characters (of the tramp) in important ways". See Musser, "Work, Ideology and Chaplin's Tramp" in *Resisting Images: Essays on Cinema and History*, edited by Robert Sklar and Charles Musser, Temple UP, 1990, pp. 36-67 (p. 42).

[24] Films by AM&B, Edison, Cricks and Martin, Essanay, Gaumont, Hepworth Manufacturing Company, Kalem, Lubin, Lux, Mitchell and Kenyon, Nestor, Paul's Animatograph Works, Pathé-Frères, R.W. Paul, Selig, Vitagraph, Walturdaw, Williamson Kinematograph Company and others featuring "tramp" in the title are listed in the databases of the National Film Archive, London, the American Film Institute and the Library of Congress, Washington D.C.

between the years 1897 and 1902 alone (145). The majority of these early shorts drew on the styles and conventions of vaudeville and music hall performance, where the tramp was already a popular stock character. Prior to Chaplin's work, the tenor of these representations was decidedly mixed. Christine Photinos has cited a shift in the "social meaning" of vagrancy across the late nineteenth century and early twentieth centuries – a thesis echoed in Kusmer's argument that throughout this period, "a number of overlapping and frequently competing images" of the tramp emerged (169). The links drawn between tramping, sloth and criminality in newspaper rhetoric on both sides of the Atlantic cited in this chapter were gradually countered by more favourable associations – affection, nostalgia, comedy, admiration – which I explore in more detail in Chapter Three. Yet early cinema did, in part, contribute to a common vision of the tramp as an anti-social element, whose diverse troublesome behaviours were rooted in his fundamental unwillingness to work and his readiness to feed upon the rewards of other people's labours.

The American Mutoscope and Biograph Company's film *Tramp in a Millionaire's Bed* (1897), for example, which showed a tramp sneaking into the home of a rich man and "mak[ing] himself comfortable in his luxurious bed", constructed the tramp as an impudent freewheeler, encroaching on the hard-earned luxuries of the better classes (*AMB Picture Catalog* 13). The film drew its premise from a real-life incident widely reported in the national press, and was taken up again in *The Astor Tramp*, released by Edison in 1899 (a surviving print of which has been preserved and digitized by the Library of Congress), which depicted a tramp's occupation of a wealthy lady's bedroom at the famous Waldorf-Astoria hotel, New York. In both instances, the tramp's unwanted presence in would-be private spaces of economic success underscores the distinction between society's earners and its scroungers. At the same time, however, it may also have served to suggest the contiguities between them. Kenneth L. Kusmer has identified a sub-discourse on "tramps and millionaires" in the first decade of the twentieth century, and suggests that this was expressive of a growing tide of opinion which characterized the leisured classes as idle, and emphasized social inequality (176-77). Such language was most notably appropriated by Theodore Roosevelt in 1908, when he told an assembly of farmers in New York state: "I do not envy the idler, neither the idle son of a multimillionaire nor the hobo" ("Roosevelt to Stop Big Man's Rascality" 2, cited in Kusmer 177). It is therefore equally conceivable that audiences who went to see *The Tramp and the Millionaire* and *The Astor Tramp* saw the shared characteristics of the rich man and the tramp, and found an element of schadenfreude in the latter's appropriation

of the former's privileges.[25] Such visual pleasures were also released by vagrants' antics in *The Acrobatic Tramps*, produced by the Hove-based Williamson Kinematograph Company in 1902, in which professional acrobats John and Charles Cobbold played two tramps pursued by an old carpenter who keep vanishing and reappearing to evade capture (Sopocy 8). *The Acrobatic Tramps* suggests the wily elusiveness of tramps, whose mobility and numbers seemed to situate them both everywhere and nowhere.

Whether the wealthy were the victims of vagrants or shared some affinity with them, the cinematic tramp continued to embody a condition of idleness which, in some cases, was shown to jeopardize the fortunes of the honest grafter. Two separate films from 1909 configured the tramp as a particular menace to dutiful labourers. In Edison's *How The Tramp Got the Lunch*, a vagrant unwilling to secure sustenance though his own efforts steals the food of two working men, whose lunches are lost in the ensuing fray.[26] The Pathé-Frères film *L'incendiaire*, released under the title *Careless Tramp* in the US in September 1909, extended this principle, depicting the destruction of an entire rural harvest by a hobo named Jim. A digitized copy of the film, the original print of which is held in the Gaumont Pathé archive in Paris, is available to view through the archive's website.[27] Summaries of its content appeared in the contemporary trade journals *The Bioscope* and *The Moving Picture World*, but no critic I have been able to trace has discussed the film.

The leisurely pace of the opening scene matches the languor of its documented subject. The first thirty seconds of the film show Jim lighting his pipe, and gently taking a seat in a haystack. A close-up shot focuses on the pleasure of the recreational act: Jim exhales puffs of smoke, sighs contentedly, then gradually falls asleep (fig. 1.1). A cut to a group of labouring farmhands juxtaposes this image of idleness with physical labour (fig 1.2). Noticing the smoke rising in the distance, the workers rush to the scene and enlist the help of the fire brigade, who work vigorously together at the water-pump to

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[25] The impersonation of a person of higher social standing by a lower-class character is a long-standing comic trope. See, for example, Shakespeare's *The Taming of the Shrew*, in which a Lord commands his huntsmen to transport the intoxicated slumbering tinker Christopher Sly to his bedchamber, and wait upon him when he wakes, in order to convince him he is an aristocrat. "What think you, if he were conveyed to bed, / Wrapped in sweet clothes, rings put upon his fingers, / A most delicious banquet by his bed, / And brave attendants near him when he wakes - / Would not the beggar then forget himself?" (Induction 1. 33-37). See *The Taming of the Shrew*, edited by Ann Thompson, Cambridge UP, 2003, pp. 54-67.

[26] For a summary, see "How the Tramp Got the Lunch", *The Moving Picture World*, vol. 4, no. 24, 12 June 1909.

[27] See www.gaumontpathearchives.com.

extinguish the flames (fig. 1.3). Meanwhile, Jim is roused from his idleness by the awakened resentment of the villagers. Their mobilization supplies the visual energy of the film, as the mob chase the tramp through a wood, into a ditch, across a courtyard, over a railway line and into a swamp, where they finally apprehend him (fig. 1.4). He is beaten, lynched and abandoned, before a female peasant passing by cuts him down with a sickle, saving his life.

Figs. 1.1 - 1.4 (top to bottom, left to right) The idle tramp as active threat to collective labour and social order in stills (with time captures) from *L'incendiaire/Careless Tramp*, Pathé-Frères, 1909.

Careless Tramp combined the figure of the tramp with another staple generic element from the pioneering era of early cinema: the chase. Jonathan Auerbach has described chase films as "a large group of early multi-shot movies devoted almost exclusively to representing the activity of pursuit" which enjoyed peak popularity between 1903 and 1906. Scenarios typically involved the pursuit of an individual deemed to be demonstrating anti-social behaviour by the police, and/or a vigilante group comprising their apparent victims. "Thematically," Auerbach notes, "such frenetic pursuit dramatizes how forces of social order – law, reason, marriage – manage to contain and subdue irrational, anarchistic, disruptive energies and fears that are located in the individual being

chased" (110). Indeed, the emphasis in the film's title on the tramp's negligence corresponds with the events of the film: the fire is shown to be caused accidentally through Jim's inattentive behaviour. A descriptive summary in the American trade periodical *The Moving Picture World* echoed this, citing the "happy idleness" of the tramp as the cause of the flames which obliterate the year's crop ("Careless Tramp" 425).

However, the film's original French title implied an act of maliciousness. As a noun, "incendiaire" translates as "arsonist": one who deliberately causes a fire. It also carries the figurative sense of an incendiary – one disposed towards inflammatory acts of behaviour ("incendiaire"). Whether malevolent or reckless, the idle tramp is construed in Pathé's film as a malign force, one posing an active risk to the efforts and rewards of coordinated labour. The collective bodily energies of the farmhands and the fire-crew in their respective tasks are offered in stark visual contrast to the idleness of the tramp, constituted here as an uncompromisingly destructive force. In the opening shots, the film cuts between the sole figure of a reclining Jim (fig. 1.1) and the cooperative grouping of the agricultural labours, working together, centre-frame (fig. 1.2). With the sighting of flames, the regularized movements of the workers' bodies and the tranquillity of the rural setting are superseded by urgent efforts to extinguish the blaze (fig. 1.3), intercut with the frenzy of pursuit (fig. 1.4). The tramp's individualism sets him apart from the social good – and visual poetics – of collective action.

Cultural configurations of the idle tramp as an active threat to the social order also circulated through associations made between the tramp population and striking workers. The conflation of tramp and striker sprung from the perception that both types shared the moral and physical recalcitrance of the idle individual. During the American railroad strikes of 1877, workers protested against wage cuts and working conditions.[28] Later that year, the Scottish-American writer Allan Pinkerton published a treatise titled *Strikers, Communists, Tramps and Detectives*. It purported to offer an accurate account of "those classes and organizations most extensively represented in the great strike of 1877", drawn from the investigations of his detective agencies commissioned by railway and manufacturing bosses (24). Pinkerton stated that idleness formed the pernicious core of the strike, and had generated an "enforced idleness" which had spread, with widespread ramifications (19). He argued that by preventing the movement of trains and causing some

[28] For more on the 1877 strikes, see Howard Zinn, *A People's History of the United States: 1492-Present*, Longman, 1980, pp. 245-51.

businesses to go bankrupt, strikers were responsible for the diffusion of a malicious ideology which pitched an "attitude of defiance" and "anarchy" against "law, order and society" (18). Pinkerton employed the same pathologizing alarmism to describe strikers as was elsewhere used by the media to describe tramps (see p. 53 above). During the general strike, he claimed, the country was "palsied, its local authorities paralyzed, its State governments powerless" (13). Striking was a disease which impaired the body politic, and the fact that its etiology was indistinct was even more concerning:

> It was everywhere; it was nowhere. A condition of sedition which can be located, fixed, or given boundaries, may, by any ordinary community, be subdued. This uprising, in its far-reaching extent, was so alarmingly sudden that it seemed like the hideous growth of a night. It was as if the surrounding seas had swept in upon the land from every quarter, or some sudden central volcano had upraised its hideous head and belched forth burning rivers that coursed out upon the country in every direction (14).

Pinkerton's overdetermined apocalyptic metaphors suggest the destructive power of a collective group mobilized not in productive efforts, but in a counter-ideological protest to productivist logic – a protest that is difficult to contain. The paradoxical sense of pervasive disparity he identifies in a "condition of sedition" that is both "everywhere" and "nowhere" recalls the persistent elusiveness of the vagrant identified in the film *The Acrobatic Tramps*. Pinkerton did not implicate tramps directly in the 1877 strikes. But his juxtaposition of tramps and strikers within a publication which also discusses a national communist insurgency suggests the commonalities between them he perceived. His treatise also invited the reader to consider the striker as a politicized tramp and, therefore, as an agent of contagious idleness. The implications of the composite subject and the structural organization of the volume make this invitation clear.

Other commentators suggested an even closer relationship between the two groups. Paul T. Ringenbach has observed that by 1877, fear of communism and the use of the term "army" in conjunction with the word "tramps" in literature and the press expressed a general concern with "the tendency of tramps to move and act in groups more militantly" (13). In the strikes of 1877, "so-called communists, youth labor, and tramps were alighted against the forces of capitalism – state militia, municipal police and railroad company guards" (13). "No difficulty can rise between labor and capital at which these fellows will not be ready to assist", *Scribner's Monthly* said of tramps, in 1878. "They

stand waiting, a great multitude, to join in any mob that will give them the slightest apology for pillage, and the safety that comes in numbers" ("Once More the Tramp" 883).

Cultural interest in the relationship between tramps and labour disputes was not limited to newspapers and magazines. The year following the 1877 strikes saw the publication of two dime novels exploring the transformation of the tramp into a political agitator. *The Tramp: His Tricks, Tallies and Tell-Tales* (published anonymously but edited by Frank Bellew), told the tale of an out-of-work printer who becomes a tramp and joins a revolutionary brotherhood of homeless men living in an encampment in the forests of Pennsylvania. Together, they forage and steal to support themselves, and collude with similar groups elsewhere. Collectively, they number half a million, representing "a fearful power in this country at present, under a most perfect system of organization", and they are "ready at any moment to hurl their power at the throat of organized authority" (23, 20). The group's anti-capitalist critique, as articulated by one of its organizers, is explicit: "let those twaddlers who prate about *things regulating themselves*, and about the holy capitalists, as though they were another race of beings – let them see whether it would not have been better to regulate things a little, rather than to have left them to regulate themselves with lamp-posts and lead pills" (23).

Lee O' Harris's *The Man Who Tramps: A Story of Today*, offered a fictionalized account of a young farm hand who falls in with a tramp gang led by an Irish communist who orchestrates the 1877 strike in Pittsburgh. Early in the novel, the narrator cites the particular dangers posed by "political tramps", citing the growth of the tramp population since the American Civil War. Those displaced soldiers whose indolence prevented them from finding work, he suggested, were joined by French immigrants "who had tasted the intoxication of anarchy and bloodshed" during the Paris Commune of 1871. Their "inflammable doctrines", he warned, "threatened the very life of the nation" (21, 19, 21). Harris's anti-vagrancy rhetoric also took in a nationalist xenophobia. Opening the fictionalized account of the riots of Pittsburgh in Chapter XXIII, the narrator warned that the "irresponsible floating populace" of home-grown tramps is radicalized by "the outcasts of all nations who drift upon our shores and fasten upon the industries of our country like barnacles to the bottom of a ship" (267-68).

This suspected alliance of tramp and striker surfaced again in the economic depression of the 1890s. In 1894, a group of striking workers led by the businessman and politician Jacob Coxey marched from Ohio to Washington, D.C., to protest

unemployment.[29] Reporting on the march under the derisive headline "In Dreams He Sees an Army: Then Coxey Awakes and Sees Only Fifty Tramps", *The New York Times* observed that of the initial group assembled, most were "tramps who camped in the woods surrounding the town during the night" (5). In this report and in others, tramps were conceived as ready participants in political and social unrest. The perceived extent of this problem was such that in Buffalo, N.Y., authorities attempts to subvert working-class agitation using the terms of anti-tramp legislation passed by the state in the previous decade (Cresswell 51). In hegemonic terms, the tramp and the striker were of the same ilk: by withholding their labour, they contested the fundamental precept of industrial capitalism.

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Scientific investigations into fatigue, and the diagnostic category of neurasthenia, medicalized certain forms of corporeal inactivity. In conceptualizing torpor as a pathological condition, they raised the possibility – and necessity – of remedial action. As such, they facilitated a burgeoning commercial interest in human health which found expression in a range of commodity cures for exhaustion within an expanding medical marketplace. Similarly, economic assessments of malingering, underworking, tramping and strikes generated pretexts for the institutional regulation of working life. Where idleness was found, willpower had failed, and disciplinary purposiveness would step in. New labour management practices sought to marshal the ungoverned bodies of the slow-worker and the non-worker. Together, these corrective strategies would seek to restore the arrested energy of the body in ways which would activate both its productive capabilities and its consumerist proclivities. In Chapter Two, I consider these corrective strategies both as they were therapeutically proposed and practised, and as they were represented in cultural forms.

[29] For a historical study of Coxey's Army protest march, see Carlos A. Schwantes, *Coxey's Army: An American Odyssey*, University of Nebraska Press, 1985.

Chapter Two

Galvanized Energies

At the annual dinner of the American Philosophical Association in December 1906, society president and Harvard Professor of Philosophy William James addressed an assembly of members on the topic of "The Energies of Men" (Richardson 489). The following year, in a publication of the same title which drew on this speech, James suggested that maximizing "human energies", muscular, spiritual, emotional and moral, was a matter of paramount importance (James 11, 13). James' concern was that individual bodies were not realizing their full energy potential, and that this problem was inhibiting America's prosperity. That "few men live at their maximum of energy", James stated, posed a "practical problem of national economy", adding that "a nation filled with such men is inferior to a nation run at higher pressure" (10, 11). Arguing that "men the world over possess amounts of resource which only very exceptional individuals push to their extremes of use", James sketched an impression of bodies in stasis, "neither gaining nor losing power when once the equilibrium is reached on astonishingly different quantities of work" (9). According to his assessment, the work of exploiting the "stored-up reserves of energy", those "deeper and deeper strata of combustible or explosible material" latent within an organism that were "ordinarily not called upon", was a matter of public health, and therefore, of national interest (8). "Slumbering" energies, he noted, were a risk to the body's constitution, the root cause of "the formidable neurasthenic and psychathenic conditions…that so many medical books describe", and which he himself had experienced first-hand (14, 15).[1] The root cause of such conditions, as James envisaged them, was a failure of individual volition. "Inveterate *habit* – the habit of inferiority to our full self", had left man "subject to arrest by degrees of fatigue" (15, 16). Fatigue did not impede willpower, he implied, suggesting instead that lack of willpower left the body susceptible to fatigue.

One solution to this problem, James suggested, was to work through "the first effective layer of fatigue" to achieve "a more active rate of energizing" (7, 10). Unlike Angelo Mosso, whose physiological study had identified fatigue as the legitimate

[1] For more on James' self-identification as a neurasthenic, see Howard M. Feinstein, *Becoming William James*, Cornell UP, 2000, pp. 241-50.

boundary of an organism's capacity for work (see pp. 41-42 of this thesis), James advocated working through physical and mental fatigue to achieve a second, a third and even a fourth "wind" on the other side (7). If "an unusual necessity forces us to press onward", then beyond the "extremity of fatigue-distress", James promised, might lie "amounts of ease and power that we never dreamed ourselves to own" (7, 8). Internal willpower, then, constituted one form of this impelling "unusual necessity". However, where individual motivation failed, coercive strategies could ensure that men were "trained up to their most useful pitch of energy" (11). In articulating the importance of forcible re-energization, James drew on the scientific concept of "dynamogeny", a term with somatic origins first used in the work of the physiologist Charles Edouard Brown-Séquard to describe the effects of muscular excitation.[2] Borrowing the sense of stimulation and incitement offered by the term, James used it to refer more generally to strategies and processes of energization which would overcome both pathological and self-disciplinary obstacles to "unlocking…unused reservoirs of individual power" (29). *The Energies of Men* proposes that such strategies of innervation should measure the limits and means of mental and physical stimulation via scientific enquiry.

In its call to find new "dynamogenic" methods of individual and collective re-energization, James' work echoed the prognosis for modern civilization offered by Nordau in the closing section of *Degeneration* a decade earlier. Nordau had expressed a belief that despite the population's degenerative condition, "people will recover from their present fatigue" to achieve a future state in which "civilized humanity shall have triumphed over its exhausted condition" (550). His idealization of "men who rise early, and are not weary before sunset, who have clear heads, solid stomachs, and hard muscles" (541) corresponds with James' identification of "exceptional cases" who push beyond the limits of fatigue to release hitherto unrealized energy provisions (James 7). Both drew on scientific concepts in their calls for corporeal regeneration. However, whilst Nordau's prediction invoked the principles of natural selection ("The feeble, the degenerate will perish; the strong will adapt themselves to the acquisitions of civilizations" 550), James

[2] "Those excitations, more or less instantaneous, in the nervous or contractile parts more or less distant from the site or irritation, which exaggerate a power or function". Charles Henry, "Sur la dynamogénie et l'inhibition: Note de M. Charles Henry présentée par M. Brown Séquard", *Comptes rendues de l'Académie des sciences*, vol. 108, 7 Jan 1889, p. 70. Cited in Robert Michael Brain, *The Pulse of Modernism: Physiological Aesthetics in Fin-de-Siècle Europe*, University of Washington Press, 2015, p.103.

instead looked to science as a means by which the energy potential of the human body could be quantified, and amplified, in practical ways.[3]

Though published eleven years apart, *The Energies of Men* and *Degeneration* share a tonal ambiguity in their discussions of bodily energy. Both combine catastrophizing and pessimistic narratives with an applied optimism. In this sense, they are representative of a wider body of texts that counterbalanced concerns about the "arrested" energies of fatigued, neurasthenic and idle bodies with new strategies for corporeal rehabilitation. I consider a selection of such texts in this chapter. They form the necessary contextual backdrop for Chapter Three, which examines cultural forms that responded to these medical, commercial, economic and literary investments in the replenishment and reapplication of the body's energy-economy.

Electricity and the body's vital force

This pervasive interest in corporeal re-energization was informed in part by speculation in scientific writing and popular science periodicals surrounding the nature of the body's vital force. The hypothesis that the vital spirit maintaining all organic life corresponded with the mysterious force of electricity dated back to theories of animal electricity in the eighteenth century (Galvani 1791). The supposition, though unproven, that the body contained electrical impulses, came to dominate the ways in which both specialists and non-specialists sought to understand the body from the late nineteenth century onwards. Historians of science such as Janet Oppenheim and Iwan Rhys Morus ("Batteries") have observed the conflation of nervous energy and electrical power in discussions and debates during this period.[4] However, the full significance of this powerful analogy – taken up by physicians, quacks, journalists, fiction writers and early film-makers alike – has not been critically explored.

The analogy between physical power and electrical energy clearly informs an 1884 article in *Scientific American* titled "Electricity – Its Relation to Vital Power", which

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[3] The biological definition of natural selection is "the evolutionary theory, originally proposed by Darwin, of the preferential survival and reproduction of organisms better adapted to their environment". See "natural selection, n.", *OED Online*, Oxford UP, June 2016. For further background on the nineteenth-century evolutionary theories of Jean-Baptiste Lamarck, Charles Darwin and others and their cultural influence, see Peter J. Bowler, *Evolution: The History of an Idea*, University of California Press, 2009; *Evolution and Victorian Culture*, Bernard V. Lightman and Bennett Zon, Cambridge UP, 2014.

[4] See Oppenheim, *"Shattered Nerves"*, pp. 80-81 and Morus "Batteries, Bodies and Belts: Making Careers in Victorian Medical Electricity" in *Electric Bodies: Episodes in the History of Medical Electricity*, edited by P. Bertucci and G. Pancaldi, Universita di Bologna, 2001, pp. 209-238 (p. 214).

took as its premise the equivalence of "vital force" and "nerve force". It announced that the "relation between electricity and nerve force" was a question "of infinite importance to the welfare of every human being", observing the similarity of their effects on muscular activity and the conceptualization of both as fluids which "run" through the body. Electrical stimulation, it added, could produce an involuntary action which bypasses the will and influences "human vitality" (276). Writing for the same publication in 1891 on the topic of "Vital Energy and Electricity", Thomas Edison affirmed that "there is a close affinity between vital energy and electricity" but emphasized that the relationship was analogical: "I do not say that they are identical; on the contrary, I say they are very like" (356). One particularly pervasive metaphor equating nerve force and electricity was that of the body as a battery. In *American Nervousness*, George W. Beard suggested that "Men, like batteries, need a reserve force, and men, like batteries, need to be measured by the amount of this reserve, and not by what they are compelled to expend in ordinary daily life" (11). This sense of the latent potential of the human body endured into the twentieth century: it also underpins William James' *The Energies of Men*, a text published almost three decades later. Elsewhere, an article in *Popular Science Monthly* published in 1889 supplemented scientific assessments on the topic with anecdotal evidence, citing various reports of electrified bodies which seemed to exhibit "singular powers" of magnetization. It took such accounts as further evidence that "every human being, and in fact every animal organism, [is] in some degree a producing battery of electricity" (Kirk 78, 79).

The strength and ubiquity of analogies made between the vital energy of the body and electricity had their foundation in the degree of uncertainty surrounding both. Two separate articles published within weeks of each other in *Scientific American* in 1892 asked "What is Electricity?". Neither article in fact went on to offer a defining moment of clarification. The first drew on a presidential address made by William Crookes, President of the Institution of Electrical Engineers in England, who conceded: "We know little as yet concerning the mighty agency of electricity" (Crookes 89). The second offered a working definition of electricity as "the unknown thing, matter or force, or both, which is the cause of electric phenomena", though admitted that little about its form or origins was known (Bain 152). Electricity would not emerge as the primary energy supply for the home until the 1930s, but the word entered the lexicon of everyday journalism in the latter decades of the nineteenth century. For much of this period, use of the term by physicians, quacks, governmental authorities and individual citizens far exceeded widespread understanding of the nature of electricity. An immaterial form of energy

undetectable to most of the senses, it had no stable ontology. In the absence of concrete understanding, contradictory and competing explanations circulated in specialist literature and the popular press alike, where it was conceptualized variously as a single fluid; two fluids; "a mode of ether" "a mode of motion", an "imponderable element" (Bain 152) and, particularly from the 1880s onwards, as "an ineffable mystery beyond the power of science to capture" (Gooday, *Domesticating* 38). George Lakoff and Mark Johnson have demonstrated the centrality of metaphor in offering an unconscious structure to perception and understanding. As a type of analogy which trades on association and comparison, metaphor is intrinsic to cognitive processes, and the language of metaphor functions in this capacity not just within the creative province of literature and journalistic writing, but within the processes of scientific and medical discovery too.[5] It was within precisely these conditions of conceptual and textual polysemy, imprecision and conjecture that the conflation of electricity with vital force was collectively produced across both scientific and cultural forms.

"Vril"

Stella Pratt-Smith's wide-ranging study *Transformations of Electricity in Nineteenth-Century Literature and Science* has drawn attention to the prevalence of references to electricity in scientific, journalistic and fiction writing between 1831 and 1881, and the general familiarity of "scientists…entertainers, educators, or simply curious members of the public" with the practice of electrical science (108). Focusing on literary responses to electricity, Pratt-Smith argues that popular fiction offered more sustained engagements with electricity than canonical novels. The latter, she suggests, "offer little in the way of reflection about the phenomenon, in terms of its technical properties, its contemporary significance, or its role within the broader narrative". Stories featuring electricity in popular novels and periodicals, meanwhile, typically represented more "sustained and detailed depictions of electricity's properties, possibilities and repercussions" (163).[6]

One of the most high-profile popular novels in the late-nineteenth century to participate in discursive formations surrounding electricity and the body was the

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[5] For more on the use and function of analogy within science, see Cutler J. Cleveland, *Concise Encyclopaedia of the History of Energy*. Elsevier 2009, pp. 91-92.

[6] Pratt-Smith identifies and analyzes obscure examples of literary fictions featuring electrified bodies published in British periodicals throughout the nineteenth century. See Pratt-Smith, *Transformations,* pp. 116-22 and pp. 145-63.

speculative fiction *The Coming Race*, by the English writer Edward Bulwer-Lytton. First published in Edinburgh, London and New York in 1871, and one of a number of literary British literary works of "electrical futurism" from this period, the novel enjoyed such widespread popularity that six further editions followed within twenty-four months.[7] The story follows an American protagonist who stumbles upon a subterranean race called the "Vril-Ya", which draws its name from a pervasive energy source called "vril". The unnamed protagonist explains that vril has no direct synonym – and no equivalent – outside this society, but that the phenomenon corresponds broadly with "forces of nature" such as "magnetism" and "galvanism", and inform "atmospheric magnetism…mesmerism, electro-biology, odic force" (45-46). Writing to his friend John Forster the year before the book's publication, Bulwer-Lytton articulated the meaning of vril with more specificity:

> I did not mean Vril for mesmerism, but for electricity, developed into uses as yet only dimly guessed, and including whatever there may be genuine in mesmerism, which I hold to be a mere branch current of the one great fluid pervading all nature…Now, as some bodies are charged with electricity like the torpedo or electric eel, and never can communicate that power to other bodies, so I suppose the existence of a race charged with that electricity and having acquired the art to concentrate and direct it in a word, to be conductors of its lightnings. ("Letter to John Forster", cited in V. Lytton, p. 466)

Endowed with such a force, this futuristic society is democratic, free of warfare, and physically robust. Women are accorded equal status to men, labour is performed largely by automata and disease is a thing of the past. Critical discussions of the novel since the 1960s have disagreed about the nature of its vision, seeking to square some of these elements with Bulwer-Lytton's political beliefs in order to ascertain the extent of its satire. Some have read it as a dystopian conservative text (Campbell; Wagner) or a challenge to scientific materialism (Seeber). Rosalind Williams has echoed this insistence on the novel's pessimism in her assessment of its evolutionary and racial discourses, arguing that Bulwer-Lytton aimed to suggest that social evolution is, in fact, a

[7] The "electrical futurism" genre, as defined by Graeme Gooday, extended across British periodical literature and fiction and presented electricity as "the principal generator of future societal progress". See Gooday, "Profit and Prophecy: Electricity in the Late-Victorian Periodical" in Cantor et al., *Science in the Nineteenth-Century Periodical* (p. 239).

degenerative process.[8] More recently, scholars such as Bruce Clarke and Barri J. Gold have analyzed the novel within the context of late nineteenth-century energy science. Scholarship to date, however, has not yet explored the ways in which the novel traded on popular fascination with electricity and pervasive uncertainties about its nature and effects.[9] In fact, Bulwer-Lytton's speculative vision of electrically-endowed bodies expresses a confidence in the regenerative power of electricity to augment bodily function and remake contemporary society, even as the utopian desirability of the Vril-Ya civilization is called into question.

Expressive of a "unity in natural energetic agencies", vril is shown to have manifest uses within the Vril-ya community. The power and possibility of electricity are figured within its "all-permeating agency", which offers control over "all forms of matter, animate or inanimate" (45, 80, 53). Its manifold uses and effects are reflective of the ambiguities surrounding the nature of electricity and its relationship to the human body in scientific writing and popular science. In the Vril-Ya, Bulwer-Lytton imagines a race that has mastered the mysterious power of electricity through corporeal assimilation of its force, and visualizes the physical and social transformations this procurement might facilitate. Administered through a hollow conductor of bright metal named a "Vril Staff" – a prosthetic extension through which its force can be "altered, modified, or directed" – its somatic interface is "a visible nerve, perceptible under the skin, which starts from the wrist skirting the ball of the thumb, and branching, fork-like, at the roots of the fore and middle-finger" (99, 102-3). This unification of external and internal energy forms is an imaginative extension of the scientific logic equating vital force, nerve force and electricity. Although vril can function in a disciplinary and destructive capacity – it is used to control an automaton workforce and to occasionally annihilate entire civilizations – the novel foregrounds its novelty, utility and advantage.

One of the primary benefits of vril is the preeminent physical condition of the entire race. The protagonist's early impression of the Vril-Ya is a "race akin to man's, but infinitely stronger of form and grander of aspect" (28-9). Later, he offers a more specific physiological inventory, emphasizing the absence of disability, abnormality and

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[8] Patrick Parrinder has also foregrounded the novel's racial politics, emphasizing the eugenic practices upon which this post-human civilization is sustained. See *Utopian Literature and Science: From the Scientific Revolution to Brave New World and Beyond*, Palgrave Macmillan, 2015, pp. 82-86.

[9] Pratt-Smith considers the novel's references to electricity within the context of contemporary scientific investigation (see *Transformations*, pp. 26-34). My distinctive interest here is in the book's conception of electricity as an embodied force.

senescence: "I never met with one person deformed or misshapen. The beauty of their countenances is not only in symmetry of feature, but in a smoothness of surface, which continues without line or wrinkle to the extreme of old age" (93). Vril "can replenish or invigorate life, heal, and preserve, and on it they chiefly rely for the cure of disease, or rather for enabling the physical organisation to re-establish the due equilibrium of its natural powers, and thereby to cure itself" (53). So potent is its restorative capacity that the people have a typical life-span of one hundred years, and enjoy "a general degree of health and vigour which makes life itself a blessing even to the last" (114). The "invigorating and medicinal properties of vril, applied for remedial purposes" (115) unlock social harmony, longevity and racial distinction.

The threat that this superior race is "destined to return to the upper world, and supplant all the inferior races now existing therein" (95) is counterpoised by the example it offers to the upper world for elective regeneration in a post-labour society. The novel closes with the protagonist's return to his own world. As such, the story accommodates the possibility that a project of bodily energization and social-reorganization akin to that undertaken in the subterranean world might accelerate the development of upper-world civilization along the same lines. Such a project, facilitated through bodily exploitation of electricity as a galvanizing force, would supplant the doctrine of work embodied in the visions of William James or Max Nordau. Amongst the Vril-Ya, "the motives that impel the energies and ambition of individuals in a society of contest and struggle", have become "dormant and annulled" (194). Where the Vril-Ya have evolved to a condition of equilibrium in their economy of internal and external bodily energies, the human race is still endeavouring to marshal and coordinate its own. Electrical energy, corporeally-harnessed, has rendered the enterprising "energies of men" obsolete.

Whether Bulwer-Lytton intended his novel to be read as utopian fiction or not, the book's contemporary reception indicates that its readership identified with the new race it envisaged, and aspired to its condition. Furthermore, vril, the form of energy powering its fictional super-race, represented one of its most appealing elements. Newspaper and magazine reviews referred to it explicitly as a fictional form of electricity, and underscored its centrality to the story's vision of a renewed social order. *The Century* magazine highlighted the "apparent confidence in the author that electricity will yet work greater wonders than are dreamt of in our natural philosophy" ("The Coming Race" 510). Similarly, *The Times* cited the author's belief in "the possibility of great electric developments" implicit in the idea of vril – "electricity of all kinds and under all its aspect

and apparitions concentrated in the body and obedient to the command or impulses of the will" ("The Coming Race").

The centrality of electricity's regenerative power to the book's appeal was subsequently underscored by the commercial appropriation of vril. Between its initial publication in 1871 and the turn of the twentieth century, the novel was reprinted by multiple publishing houses in Britain and the United States (Brown 2004).[10] This same period saw the exponential growth of consumer culture and the medical marketplace, and within this, a flourishing trade in treatments and products which exploited popular associations between electricity and the vital, nervous force of the human body. In 1886, the Scottish manufacturer John Lawson Johnston drew on Bulwer-Lytton's novel in seeking to re-brand his "Johnston's Fluid Beef" extract. Johnston combined the Latin-derived prefix "bov-", (meaning "related to an ox"), with "vril" to form "Bovril": a name which proclaimed the product's capacity to endow the body with an energy and strength that was earthy and substantive on the one hand, and capable of fantastical, even mythic, corporeal renewal, on the other.[11] A 1902 advice manual on the causes, cures and prevention of influenza carried an advertisement for Bovril which promoted it as "liquid life" – a "nourishing", innervating natural supplement that, although "not…a medicine", had a fortifying, restorative function (fig. 2.1). This connotative relationship between the advertised commodity and electric force found visual expression in the stylized typography of the word "Bovril" at the bottom of the page, rendered in spiky characters alive with the sparks of electric action.

[10] Brown notes that the book was re-issued twenty-five times in multi-volume collections of Bulwer-Lytton's work published in Britain and America between 1875 and 1900. See Andrew Brown, "Lytton, Edward George Early Lytton Bulwer, First Baron Lytton (1803-1873)", *Oxford Dictionary of National Biography*, Oxford UP, 2004.

[11] For more on the history of Bovril and other industrially-manufactured health foods in the nineteenth century, see Lesley Steinitz, "Bovril: A Very Beefy (and British) Love Affair", University of Cambridge, 5 July 2013, www.cam.ac.uk/research/news/bovril-a-very-beefy-and-british-love-affair and Steinitz, "Health Foods and Industrial Culture during Britain's Decadent Era, 1880-1920", Doctoral dissertation, University of Cambridge, forthcoming.

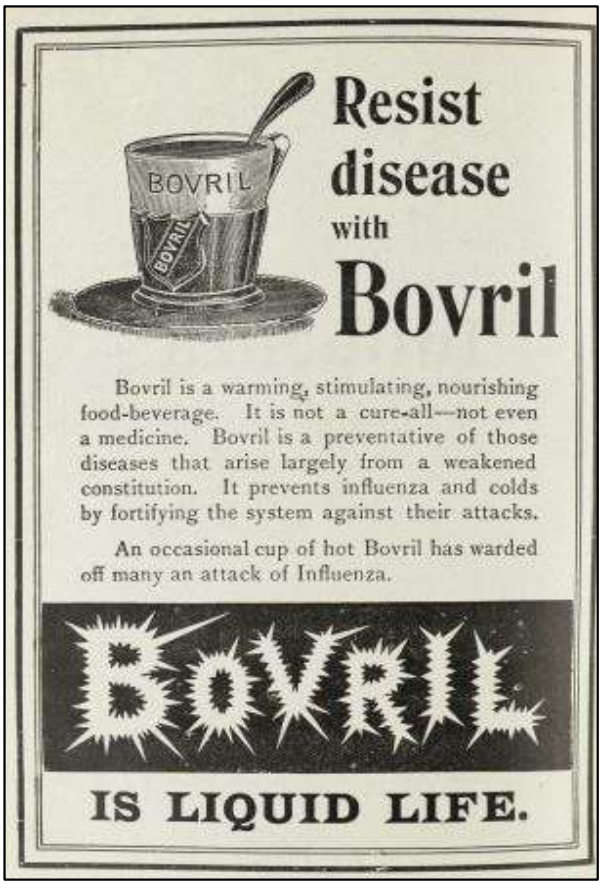


Fig. 2.1 Bovril advertisement from Abel Heywood and Son, *Influenza: Its Cause, Cure and Prevention*, 1902.

Recognizing the cultural meanings attached to electricity as a re-energizing force, and its mediation in the fictional phenomena of vril, the manufacturers of Bovril proffer their food supplement here as its comestible equivalent. Other advertisements for Bovril from the era emphasized the nutritional value of the product with illustrations of cows as signifiers of strength.[12] In this particular instance however, the chemical energy of the foodstuff is subsumed within the culturally-resonant concept of electricity as vital force.

Medical electricity and commercial electrotherapy

In *The Coming Race*, vril is a force which exists both externally (a manipulable force located in the natural environment) and internally – as a vital energy which the Vril-Ya have somatically absorbed. This duality reflected widespread conceptualizations of electricity as both a force existing within the body, and an energy source external to it, which could be appropriated and internalized for the purposes of corporeal reinvigoration.

[12] See examples in Peter Hadley, *History of Bovril Advertising*, Bovril Limited, 1970.

An understanding of the body as a closed system of energies co-existed with a belief that electricity could either "unlock" blocked energy channels in the organism[13] or replenish lost supplies through direct assimilation. Carolyn Thomas de la Peña has drawn attention to the vast range of practices undertaken during the period in which the body was the "recipient of an 'energy transfer', an actual infusion of energy produced outside the body and ingested for productive gain". Such corporeal energy-absorption strategies expressed a new confidence in the "malleability" of the body subject to outside intervention (136, 174). In the absence of a clear understanding of electricity's effects on the body, electrotherapeutic practice was predicated on this possibility of energy-augmentation: a belief that electricity applied to a living being generated not only temporary muscular stimulation, but a chemical transformation which increased the body's overall energy levels.

This premise was the foundation of electrotherapy's extensive growth in the last decades of the nineteenth century. Although the treatment of disease using electricity has a history stretching back into the eighteenth century, the late nineteenth and early twentieth centuries witnessed what Thomas de la Peña describes as a "cultural shift" in the practice, which saw the transformation of "a profitable, if limited, side business into a therapy upon which one could build an entire practice, with or without a medical licence" (99). One early and influential portent of expanded interest in the potential of electrotherapy to renew bodily energy was George W. Beard's suggestion in 1869 that "general electrization" was an effective treatment for neurasthenia (219). Beard's 1878 *A Practical Treatise on the Medical and Surgical Uses of Electricity*, co-authored with the American neurologist A.D. Rockwell, defined electrotherapeutics as "the science that treats of the study of electricity in its relations to disease" (*sic*, 214). The text promoted electrotherapy as treatment for a vast range of conditions including anaemia, dyspepsia, rheumatism, paralysis, insanity and hysteria, and offered practical guidance for physicians seeking to administer it. Updating the book for its ninth edition in 1907, Rockwell sought to clarify the ways in which electricity acted beneficially upon the body. He described electricity's "stimulant" and "tonic" effects: its ability to "correct, intensify

[13] See, for example, the fifth edition of Beard's *A Practical Treatise on the Medical and Surgical Uses of Electricity* edited by A.D. Rockwell (E.B. Treat, 1905), which suggested that with the application of electricity to the body "The inherent energy of the nerve cells is liberated" and "new paths of conduction form, resulting in modification of both motor and sensory process" (p. 284).

or economize the forces of the system" and "permanently increase its capacity for labor" (198).

Electricity's potential capacity for successfully regulating the industrialized body contributed to the growth of electrotherapeutics in the late nineteenth century. In the US, the American Electrotherapeutic Association held its inaugural meeting at the New York Academy of Medicine in 1891, and the National Society of Electro-Therapeutics formed the following year (Gritzer and Arluke 21). An estimated 10,000 physicians across the United States were practising electrotherapists by 1910 (Weiner 717). By 1900, most large hospitals in Britain had an electrotherapeutic department (Morus, "Batteries" 237), and electrotherapy was formally recognized as a medical sub-section by the British Medical Association three years later. Such legitimizing steps however, represented only one element of a complex network of motivations and practices in which the lines between orthodox and unorthodox medicine were blurred. In an article published in the popular illustrated magazine *Scribner's Monthly* in 1889, Dr Moses Allen Starr, professor of nervous diseases at the New York Polyclinic, stated that "The curative powers of electricity are really very limited, and have often been exaggerated by those to whose interest it is to urge them" (599). Starr's observation hinted at the range of financial interests which informed electrotherapeutic practice both within the ranks of "legitimate" medicine and outside it, in the context of the burgeoning medical marketplace.[14]

Throughout the last quarter of the nineteenth century, electrotherapy became the mainstay of capitalist medicine. The market in electrotherapeutics pervaded popular culture, as a proliferation of companies offered electrotherapeutic treatments and self-administering devices for the enervated consumer-patient. As Loeb ("Consumerism") and Morus ("Marketing"; "Batteries") have demonstrated, commercial electrotherapeutic businesses in Britain employed diverse strategies of marketing and selling during this period. A vast number of companies, including Harness, Pulvermacher, Dr. Crystal's, Dr. Horn's, Dr, Porter's, Dr. Lowder's, Addisons, Edson's, Edison's and Dr. Carter Moffat's, promoted an extensive range of electrotherapeutic devices, from belts and corsets to hairbrushes, toothbrushes, insoles and plasters, targeting a catalogue of ailments

[14] An article in the *Journal of Electro-Therapeutics* in 1900 titled "Will it Pay?" suggested that electrotherapy would be a profitable type of treatment for physicians. See vol. 18, 1900, pp. 34-35. Cited in Glenn Gritzer and Arnold Arluke, *The Making of Rehabilitation: A Political Economy of Medical Specialization, 1890-1980*, University of California Press, 1989, p. 23 and p. 180 (note 29).

apparently rooted in deficient energy.[15] Thomas de la Peña and Schuster (*Neurasthenic Nation*) have explored an equivalent commercial electrotherapy trade in the US, where the Sanden Electric Company, one of many producers of electric belts, netted a million dollars from sales by 1914 ("Electric Belts Net a Million").

In his study of the origins and development of modern consumerism in late-Victorian Britain, Thomas Richards proposes that the concept of "commodity culture" is a useful means by which the market economy of the late nineteenth century can be best understood:

> Properly speaking, commodity culture must be distinguished from what has been called 'consumer culture'. In addition to placing the emphasis far too strongly on consumption, the term 'consumer culture' makes it sound like there is something uniquely modern about consumption…What distinguishes industrialized market societies from earlier societies is the fact that they produce vast quantities of commodities and vast quantities of discourse about commodities. Far from being directed exclusively at consumers, this discourse about commodities can be found far and wide in the cultures of market societies – sometimes in the most unexpected places. Thus it makes more sense to speak of a 'commodity culture' that consists purely and simply of discourse about the production, distribution and consumption of commodities (268).

Richards' disambiguation shifts critical emphasis from consumer agency to the products of the market economy themselves, and their incorporation into the fabric of everyday life. This working concept of commodity culture offers a useful critical framework for understanding the particular discursive potency of electrotherapy advertising. Richards argues that the consolidation of commodity culture was predicated on the visual image. Spectacle – "a set of aesthetic procedures for magnifying the importance of the most basic element of exchange, the commodity" – became a "dominant machinery of specifically capitalist representation" (Richards 195, 251). He points to the growth of the medical marketplace as an instructive case study in the rise of commodity culture. Quacks "succeeded in making all social space…into a fertile field for the manufacture, distribution, and production of commodities", and their wares permeated diverse aspects

[15] Morus suggests that electric belts, which had been available as early as the 1850s, were promoted alongside other devices as part of a boom in electrical commodities from 1880 onwards, See "Batteries", p. 213). Thomas de la Peña notes that "A typical belt was made of cloth with interior metal wires that connected to galvanically charged disks" (p. 111).

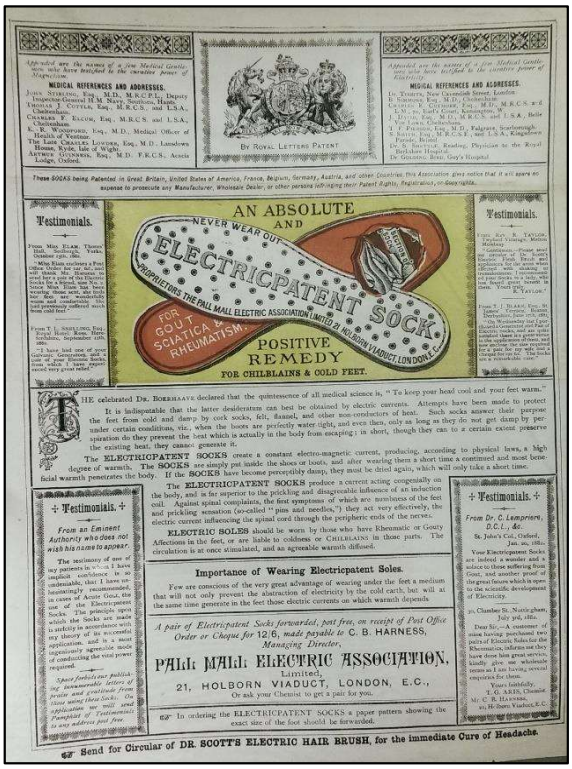
of social and cultural life (203). What distinguishes commercial medicine from the other case studies Richards explores is its primary concern with the semiotic (re)calibration of the human form. Informed by Richards' analyses, the visual currency of the electrified body, and its extension across multiple layers of society, emerges more clearly.

The rise of the periodical press across Europe and the US afforded new possibilities for visual advertising as the means by which electrotherapeutic devices were promoted. Illustrated advertisements for electric belts and other products shared the same visual characteristics: images of bodies whose commodity-driven transformations were figured in recognisable tropes of renewed vigour and able-bodiedness. An advertisement for "Ajax Dry-Cell Body Batteries" issued in the early twentieth-century by the British Electric Institute followed the same format employed by other manufacturers during this period, combining written description with an illustration of a revived body (fig. 2.2). As in the Bovril advertisement discussed earlier in this chapter, the power of electricity for physical renewal is signified through electric sparks, in a visual metaphor which exploits the concomitance of vital force, nerve force and electricity so prevalent in the medico-cultural imagination. In an advertisement for an electric belt produced by the Los Angeles-based company Dr. McLaughlin's, the regenerative power of electrotherapy is figured even more overtly in the illustration of a man standing upright and unaided, forcibly discarding his crutches as the visual symbol of his former invalidism (fig. 2.3).

Fig. 2.2 Advertisement for Ajax Dry-Cell Body Batteries, The British Electric Institute, c.1910.

Fig 2.3 Advertisement for Dr. McLaughlin's electric belt from *The San Francisco Call*, 1900.

In these illustrations, and the proliferation of others like them from the period, the re-energized body graphically demonstrates the power of the marketed product to effect visible physical changes. Another common trope within illustrated electrotherapy advertising offered an image of the commodity itself as a symbolic prosthetic for the human body part that was lacking. This synecdochic aesthetic deconstructed the body into constituent parts, positing hairbrushes, toothbrushes, eye batteries, corsets, belts and socks as synthetic treatments for their organic counterparts (figs. 2.4 and 2.5).



Figs. 2.4 and 2.5 Advertisement for "The Electricpatent Sock", c.1886, advertisement for "Harness' Eye Battery", *Illustrated London News*, 1886.

Existing analyses of commercial electrotherapy have identified the appeal of such products to a broad demographic.[16] However, these have focused primarily on the history of the electric belt. In addition, they have largely assessed individual advertisements in isolation, without considering the diversity of devices on offer or the range of spaces in which the general public would have encountered these commodities or their forms of advertising. Images of re-energized bodies and the electrical devices which had purportedly galvanized them would have been ubiquitous in urban centres in the final quarter of the nineteenth century. In Britain, advertisements appeared in pages of periodicals such as *The Graphic* and *The Queen* (De Vries 1968), and in the pages of prominent newspapers including *The Times*. The *Illustrated London News* made its first

[16] A number of scholars have indicated the broad appeal and affordability of electrotherapeutic products and treatments during the period. Lori Loeb notes that customers called by the prosecution during the 1894 trial of Cornelius Harness, head of the Medical Battery Company, were "servant girls, city clerks, petty tradesmen, labourers, common soldiers and country folk of every degree of poverty". See "Consumerism and Commercial Electrotherapy: The Medical Battery Company in Nineteenth-Century London", *Journal of Victorian Culture*, vol.4, no.2, 1999, pp. 252-75 (p. 267). Iwan Morus notes that "patients at the London hospitals were invariably drawn from the poorer sections of the working classes". See "Marketing the Machine: The Construction of Electrotherapeutics as Viable Medicine in Early Victorian England", *Medical History*, vol. 36, no.1, 1992, pp. 34-52 (p. 38). Carolyn Thomas de la Peña suggests that the technologies were used by upper, middle and working class consumers alike in *The Body Electric* pp. 10-11.

concession to display advertising in 1875 with a full-page advertisement for Pulvermacher's Galvanic Chain Belt (Hindley and Hindley 66). In the US, patent medicine advertising budgets were even more extensive (Hindley and Hindley 111) and electrotherapy advertisements appeared in periodicals such as *Harper's Weekly*, *Illustrated News* and *The Graphic* (Thomas de la Peña 111).

Beyond the readership of periodicals and newspapers, companies also solicited the attention of the consumer-patient on billboards, posters and buildings, in general supply catalogues for household goods and through direct mail-order campaigns. In London, advertisements for the Harness Company's electric belts were even printed on the reverse of bus and tram tickets (Hindley and Hindley 14). "The consumption of commodities", argues Don Slater, "exposes the everyday to large-scale and rationalized intervention by economic forces and agencies" (4). Encroaching on the public places of bus and street, the private territory of the home, and the intimate spaces of the body, electrotherapy and its accompanying advertising material constituted a powerful manifestation of this commercial agency. The practice of commercial electrotherapy, then, as I have argued elsewhere, illuminates the extent to which medicine, as a social institution increasingly defined by capitalist growth, pronounced bodies to be sick in order to cure them (through medico-commercial means), and then press them into economic service (Oakley 298).

Taylorism

Medicalized and commercialized in domestic and communal spaces within the written and visual discourses of electrotherapy, the body was also subject to new forms of corporeal energy regulation in the workplace. Renewed interest in the nature and capacity of bodily energy characteristic of discourses surrounding fatigue, nervous exhaustion and idleness also found expression in scientific investigations into the capacity and performance of the labouring body. In *The Energies of Men*, William James had suggested that the average human being "possesses powers of various sorts which he habitually fails to use. He energizes below his *maximum*, and he behaves below his *optimum*" (15). Pondering possible strategies to release or replenish human energies, James asked what "the limits of human faculty in various directions" were, and "by what diversity of means, in the differing types of human beings, may the faculties be stimulated to their best results?" (13).

In the last decades of the nineteenth century, such questions had become the central preoccupation of scientists and engineers who sought to measure the body's capacity for work through physiological experimentation. In 1894, the French physiologist Étienne Jules-Marey, noted for his studies of the locomotion of animals throughout the 1860s and 1870s, turned his investigative attentions to the mechanisms of the human body. Marey made human motion the subject of scientific scrutiny, using new instruments to register the effects of fatigue on the body during particular tasks as part of his efforts to identify – and prescribe – the most efficient of bodily movements.[17] The new "science of work" would inform the reorganization of labour in factories and other industrial settings in the final decades of the nineteenth century and into the twentieth century, as investigations into the effects of fatigue and overwork on levels of productivity were undertaken in industrial settings across Europe and the US.[18]

The most widely influential instantiation of the newly analytical approach to human performance in industry was Taylorism. Building on time and motion studies he conducted in the 1880s, the American engineer Frederick W. Taylor coupled scientific investigation into human movement with an expressly productivist agenda. In 1911, Taylor published his seminal text *The Principles of Scientific Management*, drawing on the practices and principles adopted by a "diversity of industries" under his recommendation over a period of 30 years (27-8). Subsequently serialized in the popular journal *The American Magazine*, in the *Journal of Accountancy*, and then published in a hardback trade edition intended for the general reader, the impact of the book, according to industrial historian Andreas Killen, was "truly global" and "nothing short of sensational" (53). In the opening pages of the manifesto, Taylor acknowledged that the primary source and application of scientific management was the field of engineering, but iterated the general instructiveness of such principles for "all social activities...the management of our homes; the management of our farms; the management of the business of our tradesmen, large and small; of our churches, our philanthropic institutions, our

[17] See Etiènne-Jules Marey, *Le Mouvement*, Librairie de l'Académie de Médecine, 1894.

[18] For a detailed account of the science of work in European contexts see Rabinbach, *The Human Motor*, pp. 179-237. For more on contemporary industrial investigations and experiments, see Josephine Goldmark, *Fatigue and Efficiency: A Study in Industry*, Charities Publication Committee, 1912 and A.J. McIvor, "Employers, the Government, and Industrial Fatigue in Britain, 1890-1918", *British Journal of Industrial Medicine*, vol. 44, no. 11, November 1987, pp. 724-32 (pp. 726-28).

universities, and our governmental departments" (8). The techniques of scientific management analyzed workflows in the pursuit of maximum efficiency, minimum wastage, and the optimum performance of the individual worker.

Taylor's assessment of the industrial efficiency problem corresponded with the rhetoric of arrested energies expressed in discourses on fatigue, neurasthenia and electrotherapy, but focused with specificity on the uncoordinated behaviours of the individual body as the root cause. "Wastes of human effort", he argued, were generated by "such of our acts as are blundering, ill-directed, or inefficient" (5). This collective dyspraxia was endemic across industry under "ordinary" management (35). The stated goal of "obtaining the maximum output out of each man", he proposed, could be achieved only through "scientific management" (27). The "competent man" did not exist ready-made, but had to be fashioned for purpose by newly-interventionist workplace managers in a "close, intimate, personal cooperation between the management and the man" (6, 26). Where the electrotherapeutic belts and corsets of the medical marketplace and their advertising correlatives had encroached materially on distinct parts of the fatigued body, scientific management sought holistic corporeal control, regulating "the simplest individual acts" down to the level of specific gestures (7). In the US factories where he implemented scientific management, Taylor measured the pace of labourers on their way to work and the speed at which they carried out specific tasks, alongside experiments to calculate the "foot-pounds of energy" each worker exerted (20, 55). The acceleration of the production process was contingent on the celerity of the labourer: workplace training was to ensure that "he can do (at his fastest pace and with the maximum of efficiency) the highest class of work for which his natural abilities fit him" (12).

According to Daniel Nelson, the number of factories and manufacturing plants which employed the principles of scientific management ran into the thousands and elements of the practice were also introduced in shipyards, and in the army and navy (199, 154-55). Although take-up in Britain was less extensive, Taylor's method was reported widely in engineering journals (Whitston, "Reception"). On both sides of the Atlantic, the spirit of Taylorism effected workplace change, placing a new emphasis on the productive capacity of the worker. In 1913, the popular American monthly magazine *McClure's* reported on new scientific management procedures introduced across "several large Western manufacturing companies" involving fitness interviews. Under "a new system of scientific employment", industrial physicians observed the gait, gesture, handshake, nervous tics and other physical characteristics of the would-be worker

(Hendrick 52, 53). These "chemists of human qualities" would "take a man, look him over" and "separate him into his constituent parts" to evaluate his physiological suitability for a particular task: an approach visualized in accompanying photographs of workers' hands, with captions about the kinds of temperament they apparently betrayed (52, see fig. 2.6). This combination of pseudoscientific reasoning with a taxonomic, disembodied representation of the body corresponds closely with the visual tropes of electrotherapeutic advertising. With recourse to the legitimizing discourses of science, both commercial marketing and labour management sought to create a new normative model of the body in specifically *visual* ways.

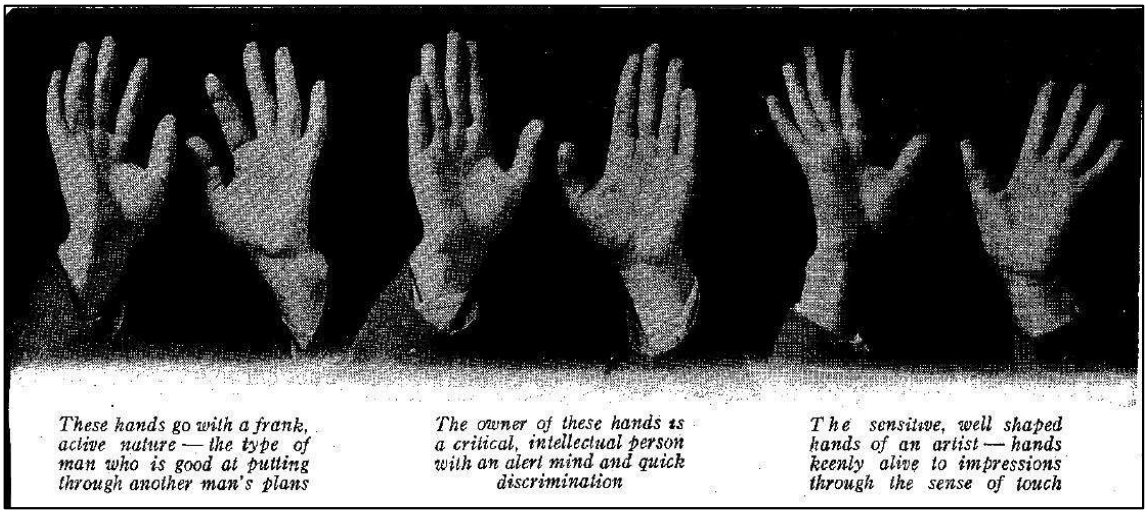


Fig. 2.6 Photographs documenting the hands of workers with descriptions of the temperaments they suggested, *McClure's Magazine*, June 1913.

Taylor argued that the prioritization of "rules, laws and formulae" above the "judgement of the individual worker" was the key to "maximum productivity", which in turn was the prerequisite for "maximum prosperity". He outlined his vision for this "prosperity" in the closing pages of his treatise: increased leisure time, a proliferation of commodities through expanded markets, and a new cooperation between workers and employers (*Principles* 35, 12, 142-3). Yet, his philosophy of scientific management, though couched in the rhetoric of collaboration between managers and workers, subjected the labouring body to unprecedented forms of regulation, supervision and surveillance. In rationalizing and prescribing the systematic deployment of bodily energy in certain types of movement – "eliminating unnecessary motions and substituting fast for slow and inefficient motions" (24) – it exemplifies the operations of discursive power over individual bodies described by Foucault:

> Disciplinary control does not consist simply in teaching or imposing a series of particular gestures; it imposes the best relation between a gesture and the overall position of the body, which is its condition of efficiency and speed. In the correct use of the body, which makes possible a correct use of time, nothing must remain idle or useless: everything must be called upon to form the support of the act required. A well-disciplined body forms the operational context of the slightest gesture. (*Discipline and Punish* 152)

In *Discipline and Punish*, Foucault identified the human body as "object and target of power", subject to manipulation, regulation, measurement and control (136). These disciplinary operations, informed by political and economic agendas, place particular demands on individual bodies as the chief instruments of certain forms of social regulation. Such discursive mechanisms posit the body as a resource – the site of particular forces to be harnessed and augmented for determined uses. Foucault's account of discipline is itself rooted in a thermodynamic paradigm:

> Discipline increases the forces of the body (in economic terms of utility) and diminishes these same forces (in political terms of obedience). In short, it dissociates power from the body; on the one hand, it turns it into an 'aptitude', a 'capacity', which it seeks to increase; on the other hand, it reverses the course of the energy, the power that might result from it, and turns it into a relation of strict subjection. (*Discipline and Punish* 138)

Here, as elsewhere in his theoretical formulations, Foucault emphasizes "the harnessing, intensification, and distribution of forces, the adjustment and economy of energies" as the *modus operandi* of corporeal discipline (*History of Sexuality* 1: 145). In the first extract above, Foucault's assessment of projects of disciplinary control takes in their temporal dimensions, as well as their spatial implications: in establishing the "correct use of the body", gesture and action are surcharged with chronologic meaning. The British historian E.P. Thompson provides an analysis of this spatio-temporal matrix specifically in relation to labour discipline in his seminal essay "Time, Work-Discipline and Industrial Capitalism". Thompson observes that following the First Industrial Revolution in the 1830s and 1840s, the English worker was marked by "his regularity, his methodical paying-out of energy, and perhaps also by a repression, not of enjoyments, but of the capacity to relax in the old, uninhibited ways", within a system predicated on "the insistent energies of industrial man" (91, 93). The emergence of Taylorism in the latter decades of that same century, then, represented the wholesale institutionalization of the

worker along these lines: the disciplinary realization of individual bodily energy as corporate labour-power.

Putting the tramp to work

As a systematic program for the mobilization of the industrial workforce, scientific management offered a stringent solution to the obstacles of malingering and overwork. Alongside the growth of Taylorism, the final quarter of the nineteenth century also saw an intensification of regulatory efforts to manage the tramp population, whose mobility across geographical space beyond the factory gates – explored in the previous chapter – exemplified uncontrolled, purposeless bodily movement on a mass scale. However, scholarship to date has not fully explored the relationship between these two socio-economic practices, or their shared logic of bodily-energy-as-capital.

The idea of using camps or colonies to deal with social problems and to concentrate members of marginal groups grew in popularity in the closing decades of the nineteenth century (D. King 138). Throughout this period, proposals for labour colonies were issued by intellectuals, politicians, and social reformers in both Britain and the US as solutions to the growing problems of unemployment and vagrancy. A number of these colonies, such as the Salvation Army Farm Colony at Hadleigh in Essex (established by William Booth in 1891), operated with philanthropic and humanitarian intent. Others were run by commercial interests.[19] Peregrination had been the basis of vagrancy's criminalization in Britain from the early nineteenth century. The Vagrancy Act of 1824 identified "every Person wandering abroad or lodging in any Barn or Outhouse, or in any deserted or unoccupied Building, or in the open Air, or under a Tent, or in any Cart or Waggon, not having any visible Means of Subsistence, and not giving a good Account of himself or herself" to be undertaking an illegal act (*An Act for the Punishment* 699). Stipulating a penalty of incarceration and hard labour of between one and three months for those found guilty of such transgressions, it functioned to apprehend and subdue the tramp as a social nuisance. From the 1880s, support for the introduction of labour colonies

[19] Hadleigh regularly ran at a loss. For more on the Hadleigh Farm Colony and other charity and commercially-operated labour colonies established in Britain in the 1880s and 1890s, see Peter Higginbotham, "Labour Colonies", *The Workhouse: The Story of an Institution*, n.d., www.workhouses.org.uk/labourcolonies/. For an overview of other philanthropic and commercial experiments in unemployment relief in Britain at this time, see José Harris' chapter "The Regimentation of the Unemployed" in *Unemployment and Politics: A Study in English Social Policy, 1886-1914*, Oxford UP, 1972, pp. 102-44.

to address unemployment in Britain grew. In 1903, a perceived increase in vagrancy and its associated costs for local authorities led to a scheme "enabling Poor Law unions throughout England and Wales to combine for the purposes of the provision and maintenance of labour colonies, and for the detention and employment of vagrants in them" ("This Problem of the Vagrant"). A summary of the *Report of the Departmental Committee on Vagrancy* released in Britain three years later suggested that the issue needed to be addressed in a "thoroughly scientific manner" (Chance 1).

Meanwhile, in the United States, as public rhetoric surrounding the "tramp problem" grew, a number of states began to pass similar anti-vagrancy laws. Legislature such as the 1876 New Jersey *Act to Define and Suppress Tramps* insisted on a definition of the tramp as an obstinate non-worker: one of a group of persons who "live idly and without employment, and refuse to work for the usual and common wages given to other persons for like work in the places where they then are, or shall be found going about from door to door, or placing themselves in the streets, highways or roads to beg or gather alms" (3681). Just as scientific management conceived the inefficient physical movements of "underworking" as an impediment to industrial productivity, such anti-vagrancy legislation conceptualized tramping as a condition of unauthorized bodily motion inimical to economic progress – and social order. From the 1880s, social policy and penal systems took a newly-proactive approach geared to one primary end: putting the unoccupied bodies of the tramp population to work in programs of involuntary labour.

An 1881 supplement to the original 1876 New Jersey *Act to Define and Suppress Tramps* gave authorities the power to compel tramps arrested by police "to labor upon any county farm or upon the streets, roads and highways of any city, township or borough, or in any house of correction, poorhouse, workhouse or common jail, for a term not less than thirty days, nor exceeding six months" (3682). Elsewhere, new schemes involved the creation of dedicated spaces within which peripatetic bodies could be contained, and their enterprising energies reactivated. The Harvard professor F.G. Peabody made trips to Germany to study the results of a network of "work stations" for tramps established across the country in the late 1880s, which compelled tramps to work for a certain number of hours in order to earn their food and lodging ("German Labor Stations for Tramps"). By the early years of the twentieth century, labour colonies employing varying degrees

of coercion had also been set up in France, Belgium and Holland ("Mr. Long and the Vagrancy Problem").[20]

In 1908, Edmond Kelly, lecturer on Municipal Government at Columbia University, published a pamphlet which drew on the labour colony model in Switzerland as "a simple, inexpensive, and complete…remedy" to the vagrancy problem faced by US authorities (xvii). Approaching vagrancy as a chiefly bureaucratic issue, Kelly proposed a dual system comprising free labour colonies for the wandering unemployed, and forced labour colonies for those who did not comply. Through this two-tier approach, Kelly admitted the heterogeneity of tramps as a group comprising individuals from a wide range of backgrounds and employment circumstances. Such differentiation did not, however, do anything to blunt his vitriol for that category of tramps he perceived to be incorrigible in their indolence and active in their criminality. "The one word tramp", he observed, encompassed those

> diligently seeking employment, innocently stealing a ride on a freight car, insanely driven by the irresistible prompting of a disordered mind, or, on the other hand, deliberately preying on the community, infesting our roads, damaging our property, assaulting our women, corrupting our youth, and breeding disease, moral and physical, through every city and hamlet in the land (5).

Kelly's visualization of this "preying", "infesting", "corrupting" and "breeding" tramp type recalls *The Manchester Guardian*'s characterization of the tramp in 1904 as "a microbe of evil", poised to "pass undetained to breed his kind". His reference to the destruction of property and its disruptive influence on the community corresponds with the view of the tramp expressed in Pathé-Frères film *L'incendiaire*/*Careless Tramp*, discussed in Chapter One of this thesis (see pp. 56-58). "Men unfit for the competition of life are a danger to the community and to themselves", Kelly warned; "they should, in their own interests as well as those of the community, be put where *without expense to the community* they can be rendered fit" (69). His invocation of state responsibility for the health of the individual citizen belies the economistic logic driving the moral and physical regeneration of the tramp population through forced labour. One of a number of prefaces provided to Kelly's treatise underscored its ideological perspective on human-

[20] Desmond King gives details of the German and Dutch labour colony models from which both Britain and the US drew inspiration and an analysis of their fiscal conditions of employment in *In the Name of Liberalism: Illiberal Social Policy in the USA and Britain*, Oxford UP, 1999, pp. 140-44.

as-capital, cheerfully predicting that "without interfering with private business or competing in the general market the colony should be able to dispose of a very considerable product". It proposed that by systematically replacing "the habit of vagrancy" with "the habit of work", involuntary labour colonies would galvanize the arrested energies of an irregularly dispersed, inactive workforce (ix, 77). By 1911, bills for the formation of "state-owned colonies" had been introduced in five American states ("What Tramps Cost Nation"). Although these bills were not finally passed, each one envisaged the pecuniary advantage of putting the tramp to work.

*

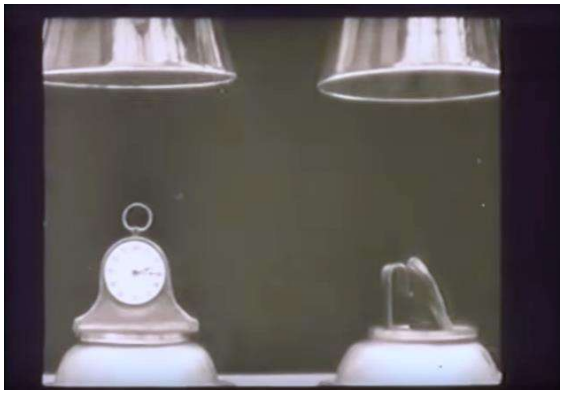
The insistence of Harvard professor William James on the "slumbering" energies of men, and Max Nordau's optimistic coda to *Degeneration* outlined at the beginning of this chapter, announced the importance of galvanizing the fatigued, idle and inefficient bodies of the late nineteenth and early twentieth centuries into gainful life. In his futuristic fiction *The Coming Race*, Edward Bulwer-Lytton envisaged a new society powered by bodies supercharged with instrumentalized energy. The manufacturers and advertisers of electrotherapy commodities exploited associations made between electricity and life-force in both medical writing and cultural forms, creating a new visual language of bodily electrification in their pursuit of commercial profit. Collectively, these diverse solutions to arrested corporeal energies conceived of a new body: revitalized, empowered and appetitive. At the same time, a new science of work focusing on the kinetics of the labouring body was implemented by increasingly interventionist workplace managers. Those not occupied in the worthwhile exercise of their productive energies were coerced into purposeful activity in dedicated labour colonies.

If these disciplinary strategies of collective regeneration, extending as they did across the spheres of medicine, science, literature, visual culture, economics and politics, represented new forms of restriction woven into the fabric of everyday life, they did not go unnoticed, or unchallenged. A selection of literary and filmic fictions registered the shared interests of electrotherapy, visual advertising, Taylorism and anti-vagrancy initiatives in the productive energy of the human body, and responded to these with creative criticism.

Chapter Three

Disruptive Energies

In a laboratory decked with electrical wires, a bearded, moustachioed inventor demonstrates a number of experiments with electricity to an assembled group of five young women (fig. 3.1). Using an electrical contraption powered by a generator placed in the centre-foreground, he applies the current to a series of metal objects. A horseshoe melts in seconds, an iron key is turned into a replica of the ornamental bust at the machine's opposite pole, and a clothing iron is reconfigured as a mantelpiece clock (fig. 3.2).



Figs 3.1 and 3.2 Stills from *Electric Transformations*, Clarendon Film Company, 1909.

After these experiments with objects, an intertitle announces the inventor's interest in "The Effect on the Human Face". Enlisting his middle-aged housekeeper as a volunteer, he seats himself at the machine next to the older woman, the electrical apparatus performs its work, and the lady's head transforms into a replica of the inventor's – a visual trick achieved by melting the celluloid image of the woman with heat and reversing the film to suggest her re-formation (fig. 3.3). In a second experiment, the inventor invites one of the young women to take his place, turns on the current, and the housekeeper's likeness is again transfigured, this time to match that of the younger woman (fig. 3.4). In the final frame, the now-identical-looking women pose either side of the electrical expert to showcase the scientific wizardry of their spectacular metamorphoses.


Figs 3.3 and 3.4 Stills from *Electric Transformations*, 1909

This short film, titled *Electric Transformations*, released by the British filmmaking company Clarendon in 1909, was one of a number of films from around the first decade of the twentieth century which traded on electricity's novelty, and on widespread uncertainty about its precise effects on living organisms.[1] Viewed on its own terms, it represents a playful interrogation of electricity's supposedly regenerative effect on the body. Indeed, the technical effects through which these metamorphoses are achieved testify to cinema's unique capacity in visualizing such corporeal changes – whether with serious purpose, or (as they appear here), firmly tongue-in-cheek. Positioning this film's scientific premise in relation to a broader set of cultural practices, however, reveals a particular story about early cinema's appetite for satirical treatments of topical subjects, together with the social function such comedies may have performed for contemporary audiences.

A synopsis of *Electric Transformations* in the British film trade paper *Kinematograph and Lantern Weekly* gave the inventor's name as "Dr. Bode" ("Electric Transformations"), and in his brief encyclopaedic entry on the film, Phil Hardy notes in passing the similarity between the "Dr. Bode" of the film's scenario and the Scottish showman Dr Walford Bodie (35). In follow-up to Hardy's aside, my own investigations would seem to substantiate Hardy's claim. Bodie toured the British music hall circuit between the late 1880s and the early 1910s with an act built upon theatrically-staged "show cures" in which he appeared to heal paralysis and other disabilities by channelling electrical currents through his own body and into the bodies of his afflicted volunteers.

[1] A surviving print of the film is held at the National Film Archive, London. An incomplete version is included in episode 2.2 of the documentary *The Amazing Years of Cinema*, titled "The Mad Scientists" (Polymedia/RM Productions, 1971). The extract is available to view on YouTube. See "Electric Transformations", directed by Percy Stow, Clarendon Film Company, 1909, "DPMay", *YouTube*, 28 April 2016, www.youtube.com/watch?v=2c8Sc64ekf8.

Bodie's theatre of electrical display was part of a tradition of electrical spectacle in popular science in Britain which first emerged in the early nineteenth century. Victorian science lecturers presented electrical phenomena to public audiences at both metropolitan and provincial sites across the century, employing visual aids including lantern slides and illustrations alongside practical demonstrations.[2] Bodie's electrification of human bodies for dramatic entertainment (and commercial profit) thus mirrored the appropriation of the body in public science lectures on electricity designed to educate (and delight) non-specialist audiences.[3] In a book on his methods penned in 1905, Bodie further exploited this intersection of medical and cultural perspectives on electricity. He elaborated his art of healing by "Bodic Force"; a mixture of hypnotism, muscular manipulation and the application of electrical currents which he claimed awoke his patients' vital forces:

> Through long and constant assimilation of electricity, and the effort to bring it into combination with my vital forces, which I may call the cogeners of electricity, I have developed a faculty for imbuing or colouring a strong current of the fluid with intelligent healing power. This, then, acts of itself, being taken up by the patients' vital forces in the same way as the chemical constituents of food introduced into the system are taken up, first by the blood, and then by the tissues (132).

Bodie's therapeutic rationale drew on the widespread conflation of electrical energy and vital force: an understanding of electricity as a chemical power which would replenish the body's diminished supplies of nervous energy in the same way that caloric energy could. Bodie's particular brand of electrotherapy proved enduringly popular with audiences, and he performed at a range of well-known venues all over the country throughout a period covering two decades. Such was the notoriety of his act that in April 1906, a young Charlie Chaplin impersonated Bodie in a stage show which parodied

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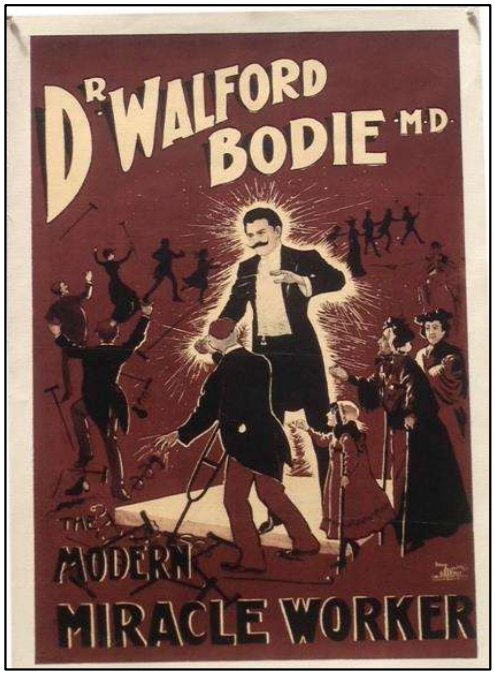
[2] Iwan Rhys Morus examines the cultural history of electricity science in London between 1818 and 1951 in *Frankenstein's Children: Electricity, Exhibition, and Experiment in Early Nineteenth-Century London*, Princeton UP, 1998. See also: John Plunkett and Jill A. Sullivan, "Fetes, Bazaars and Conversations: Science, Entertainment and Local Civic Elites" and Martin Hewitt, "Beyond Scientific Spectacle: Image and Word in Nineteenth-Century Popular Lecturing" in *Popular Exhibitions, Science and Showmanship, 1840-1910*, edited by Joe Kember et al., Pickering & Chatto, 2011, pp. 41-60 (p. 57) and pp. 79-95 (pp. 82-83).

[3] For more on the incorporation of human bodies into spectacular electrical demonstrations, see Iwan Rhys Morus, "Cables and Coils and Gassiot Cascades: That's what Electrical Bodies are made of", *Annales Historiques de l'Électricité*, vol. 8, 2010, pp. 105-17.

topical music hall and circus acts.[4] In his book, Bodie gave an account of a typical night on stage in which he hypnotized a young boy with paralysis in his left leg and applied electric current to the afflicted limb: "At a word from me the boy kicks his leg in the air and capers off the stage. He is cured" (38). Promotional images for the show depicted Bodie as a miracle-healing electrotherapist surrounded by formerly-infirm patients discarding their crutches and prosthetics gleefully (figs. 3.5 and 3.6).[5] He also launched a commercial arm of his enterprises in the Bodie Electric Drug Company, which offered audiences electrotherapeutic commodities for self-treatment. Despite a court case brought by the Medical Defence Union which revealed that his title of "Dr" had no basis in medical qualifications, business thrived (Bodie 197, 189).



Figs 3.5 and 3.6 (left to right) Advertising poster for Dr Walford Bodie's stage show and illustration on the front cover of Variety Theatre, 9th June, 1905.

Uncovering the Dr. Bode of Clarendon's *Electric Transformations* as a caricature of the real-life Dr Bodie demonstrates early cinema's incorporation of a wide range of social and cultural referents. It also particularizes the target of the film's satire. Bodie's "show cures" and "electric pills" exemplified the appropriation of uncertainty about electricity's

[4] See Stephen Weissman, *Chaplin: A Life*, Skyhorse Publishing Inc., 2013, pp. 137-141. A newspaper review of Casey's Court singled out this particular act as a highlight of the show: "the fun reaches its height when a burlesque of 'lightening cures on a poor working man' is given." See "London's Variety Theatres", *The Era*, Saturday 11 August 1906, p. 21, cited in Denis Gifford, *Chaplin*, Doubleday, 1974, p.21.

[5] An uncited newspaper article reproduced in *The Bodie Book* (The Caxton Press, 1905) noted that the showman invited "cured" audience members to donate their crutches and prosthetics to him after the show, which he used for marketing purposes (p. 176).

therapeutic effect on the body for commercial gain. The filmic Dr. Bode's unlikely theatrical "electric transformations" of volunteer bodies give the lie to the real-life Dr Bodie's own exaggerated corporeal metamorphoses.

I open with this reading of *Electric Transformations,* situating the subject matter of the film within the specific contexts of both popular science and popular culture, in order to set the scene for the particular attention paid throughout this chapter to the intersections of the two. Examining such films in relation to the medico-cultural understandings of electricity which informed them can illuminate the ways in which cultural forms such as early cinema variously ratified, reworked and resisted predominant discourses on corporeal regeneration. The early films and literary writings examined throughout this chapter offer a range of alternative responses to the dominant discourses of de- and re-energization explored so far in this thesis. Though they employ a wide range of techniques, they share the same interest in the *disruptive* energies of the human body: behaviours and movements characterized by irregularity, recalcitrance and non-conformism. Their subversive disunity, I will argue, can be cogently illuminated by Mikhail Bakhtin's theory of the "carnivalesque", a literary mode that reveals and undermines a dominant style, tone or assumption through humour and chaos. Creatively divulging the productivist logic behind diverse projects of corporeal regeneration, these films invited their readers and audiences to identify with – and delight in – their own counter-current perceptions.

Early cinema and comic "shorts"

By the end of the first decade of the twentieth century, early film institutions were undergoing a commercial transformation. Film historian Charlie Keil has defined the years 1907-1913 as the "transitional era" of early film-making, marked by significant changes in representational, institutional and exhibition practices. From around 1906 onwards, the "Nickelodeon" boom saw the development of dedicated exhibition spaces for film screenings in urban centres (Bowser 1-20). Around the same time, specially-built picture theatres were established in a range of British cities (Low 2: 15). With this growth came an acceleration in the rate of production: during the transitional era, most cinemas offered a new programme daily (Bowser 18). A number of film scholars have observed early cinema's particular dependence on cultural and social discourses for content which would meet this demand. Miriam Hansen has noted early cinema's "voracious intertextuality, its dependence – for subject matter, genres, modes of performance and exhibition – on existing forms of entertainment" ("Adventures" 54), and Charles Musser

has emphasized film's close connection to American popular culture during this period; its absorption of well-known stories, songs, and current events (*Emergence* 2). More recently, Joe Kember has argued that early cinema's audiences are best understood as "sophisticated interpreters of an immense textual, intertextual and contextual range of information", embodying a kind of collective popular social "expertise" (4).

As a new visual medium of popular culture, cinema was therefore remarkably well-placed to explore the problems of, and solutions to, corporeal regeneration. A nascent cultural form without dialogue, film was particularly attuned to gesture, and its assimilation and re-expression of prevailing understandings and anxieties about "arrested" and "galvanized" energies centred upon the visual language of the body. The films featuring the disruptive bodies of neurasthenics, tramps and idle labourers explored in this chapter are therefore best understood in relation to the contemporary discursive network outlined so far in this thesis: visual tropes of commercial electrotherapy advertising in the medical marketplace and in popular science spectacles. Their scenarios also speak directly to the regulation of productive energies in the spaces of factories and labour camps. The screen bodies in these early films are sites upon which medical, commercial, industrial and political claims converge. At the same time, they are the focal point of a project of discursive reconfiguration, transformed by the characteristics of a staple genre in early cinema: physical comedy.

Comedies were the first form of fiction film, shown as part of a varied programme lasting around one to two hours which also included *actualitiés* (e.g. street scenes, family scenes) and news events (Gunning, "Comedy" 142). They represented one of the most consistently popular film genres of the silent era, accounting for more than seventy percent of fiction films screened in the US before 1908, and remained popular in the subsequent decade (Bowser 179). Until recently, however, silent film comedy has been relatively critically neglected. What criticism does exist has tended to focus on the individual artistry of silent film slapstick: the farcical shorts of Keystone Studios produced between 1912 and 1915 (R. King), and the creative achievements of Charlie Chaplin, Harold Lloyd and Buster Keaton throughout the era of the "feature film" (see, for example, Clayton; Paulus and King; Bilton). In recent decades, scholarly accounts of this later silent comedy have begun to consider the relationship between the production and performance of physical comedy and the industrial and commercial contexts which informed their output. Historicized analyses of the work of Charlie Chaplin in this vein

have emphasized slapstick as an embodied subversion of the values of early-twentieth century capitalism (Gunning, "Mechanisms", Musser, "Work"; North).

Little critical attention however, has been paid to the mechanisms of physical comedy in the early comic shorts produced in cinema's transitional era. In her seminal history of British cinema, Rachael Low outlines some of the predominant characteristics of comic shorts in the first decade of the twentieth century. Such films, she observes, lasted a few minutes and typically centred upon one or more "*scena*" – a "detached single incident", adding that most contained repetitive sequences in which a single action was restaged "with minor variations – for in this way greater length and a cumulative effect was achieved without any increase in complexity" (Low 2: 168, 170). Formula, Low notes, was *de rigueur*: copyright laws were only introduced in 1912, and before this, plagiarism of ideas between film companies and the direct duplication of film prints proliferated (Low 1: 49). Low's brief overview of the genre as "the simplest slapstick" (2: 168) evaluates early film comedy as a genre characterized by a crude form of one-trick humour: a rudimentary form preceding "the true comedy of the humorous plot", which from around 1910 onwards introduced a new "sophistication" and "fundamental structure" (1: 175). In some senses, such critical disregard has been recommended by the evolution of the industry itself: "By the second half of the decade", as Paulus and King observe, "the multiple-reel dramatic feature film was becoming established as the industry's 'quality' commodity, marking the ascendancy of classical narrative filmmaking. The slapstick short, by contrast, was increasingly assigned to a supporting role on feature programs, its industrial and financial position weakened" (10-11).

Russell Merritt's dismissal of early film comedies from this period echoes Low's particular criticisms: "Films such as these demanded no great power of concentration; the comedy plots – if they can be called that – were simple and direct, uncomplicated by subtleties of character delineation or subplot" (64). "For all their popularity with American audiences", he adds, "they revealed little about America" (65). In opposition to these assessments, I argue here that early comic shorts have significant cultural-historical value, and merit more nuanced critical attention. Drawing on Bilton's approach to slapstick comedy as "a cultural response to the idea of the body being placed under unbearable stress" (217-18), and Robert King's reconciliation of working-class culture and experience with early film comedy spectatorship (15), in the sections below, I read comic films as vectors of social change, with a unique capacity for satirical subversion of the topical contemporary discourses they absorb. Their aesthetic of bodily disorder

exposes the dominant ethos of corporeal regeneration through parodic spectacles of energetic excess.

The comic shorts I consider all feature the application of electric current to the human body in a range of scenarios. In each case, this results in uncontrolled bodily actions at odds with prevailing directives of purposeful and productive movement. As a new technology with a stimulant effect, electricity provided fertile imaginative ground for the early film industry, given cinema's appetite for topical content and its compulsive interest in the physiology of the human body. Kristen Whissel has noted the contiguity between advancements in electric and cinematic technologies around the turn of the twentieth century: "The most important period of electricity's development, application and diffusion throughout the spheres of industry, domesticity and commercialized leisure took place between 1880 and 1930, and thereby roughly coincided with that of silent cinema" (217). Literary and filmic interpretations of electricity's properties and function emerged alongside speculative discussions in newspaper editorials and popular science publications. Elsewhere, the gradual incorporation of electrical technologies into the fabric of everyday life was accompanied by the aestheticization of electricity in various fantastical embodied forms – as a female goddess, servant, fairy, imp or wizard – which pervaded engineering iconography, architecture and popular fiction (Gooday, *Domesticating* 197-98). The early films discussed in this chapter however, do not exhibit this tendency toward anthropomorphism. Instead, they share a preoccupation with electricity's capacity to influence and direct the kinetic movements of the human body, and with a concomitant range of regulatory commercial and industrial practices.

Overcharged, a four-minute film released by British production company Hepworth in 1912, explicitly correlated electricity with regulatory power in its depiction of a man who finds himself re-energized after being connected to an electrical generator ("Overcharged"). Suffused with excess electrical energy, he uses his mastery of the invisible force to exercise control over the bodies of passers-by, moving pedestrians back and forwards along a street at will, and healing a roadside cripple. The protagonist's management of other bodies and his stimulation of the disabled body into "normal" functionality both suggest the regenerative power of electricity. The film's title, however, operates metaphorically as well as literally: this conferred authority is shown to be an excessive charge, as an intertitle announces that "The Power Begins to Fail". In its suggestion that electricity's regenerative power over the human body is fallible, *Overcharged* represented one of a number of early comic shorts which reimagined the

disciplinary and therapeutic capacity of this mysterious force. The Hepworth Manufacturing Company's interest in the humorousness of the electrified body had first been activated more than a decade before the release of *Overcharged*, in the 1900 comedy *The Electricity Cure*. In fact, a wide number of filmmakers and production companies drew on the market for electrotherapeutic devices as subject matter for their comic shorts throughout the first decade or so of the twentieth century.[6] The films they produced drew on the hyperbolized claims of electrotherapeutic cures as the source of their comedy, inviting audiences to recognize and ridicule the overstated promises of the medical marketplace.

Early cinema's comic electrotherapy shorts

As the previous chapter of this thesis demonstrated, electrotherapy promised a medical solution to a social and economic problem: bodily fatigue. Electric currents applied to the body purportedly functioned in one of two ways: by stimulating it into releasing arrested energy, or by augmenting bodily energy already present. The films I examine in this section focused on particular aspects of electricity's effect on the human body which also featured in scientific writing and popular science: the motive power of electrical current, the storage of potential energy within a particular body, and its capacity for transference between one body and another.[7] For cinema, the pathological dynamism of the electrified body – the "local spasms of muscles" and "convulsive movements" described in Beard's *American Nervousness* (7) – became a source of visual interest, and comic pleasure. Examining the French tradition of café-concert culture and early French film comedy between 1870 and 1915, Rae Beth Gordon has demonstrated the extent to which nervous disorders characterized by motor impulses became the basis for a particular aesthetic of comic performance. The comic shorts I discuss here, however, typically combined a

[6] In addition to those considered here, other films from this period released in Britain and/or US featuring the electrification of the body with an explicitly medical premise include: *Electric Treatment* (Lubin, 1903), *Mutt and Jeff Discover a Wonderful Remedy* (1911) and *Bumbles' Electric Belt* (Ec-Ko, 1913).

[7] See, for example, "Electricity: Its Relation to Vital Power", *Scientific American*, vol. L, no.18, 3 May 1884, p.276: "It is found beyond question that the direct application of electricity increases the power of action to the part to which it is applied."; E. B. Rosa, "The Human Body as An Engine", *Popular Science Monthly*, vol. 57, September 1900, pp. 491-499: "In short, energy can be measured, stored up and expended, just as truly as merchandise or money…Thus the conservation of energy means that energy cannot be created or destroyed; but it may be transferred from one body to an-other" (p. 493).

central focus on the chaotic irregularity of the pathological body with satirical critique of the electrotherapeutic devices which purported to fix it.

Gaumont's 1909 film *Electricity for Nervousness* featured a man supposedly suffering from Sydenham's chorea, or "St. Vitus's Dance", a neurological manifestation of rheumatic fever characterized by muscular weakness, lack of co-ordination, abnormal gait and random, involuntary movements.[8] The film was distributed in Britain, where the trade paper *The Bioscope* summarized scenes in which a doctor prescribes an electric belt and pads, but the patient leaves the surgery "evidently much the worse; for the electricity working on him causes him to jump and twinge in all directions". The electrified protagonist subsequently imparts the charge to all those with whom he comes into contact, generating pandemonium, before deciding that "the disease is better than the cure", removing the belt and going on his way "with simple twitches" ("Electricity for Nervousness"). Other films were more explicit in targeting the market in electrotherapeutical commodities: *Electrified Hunchback*, released in the US in 1909, featured a man purchasing an electric device to ease the discomforts of his impairment. He later removes the belt in anger and demands a refund, after finding that it imparts unregulated shocks to his body and to other people ("Electrified Humpback", *sic*). Similarly, in Cosmopolitan's 1912 film *The Electric Belt*, a maid's "Sparklet Electric Belt" causes chaos after her suitor tries it on and his erratic movements demolish an entire kitchen ("The Electric Belt").

The shared interest of these films in the comic potential of the malfunctioning electrotherapy device converges in the trope of the "crazy machine" which Tom Gunning has identified as a common element in silent film. These "complex devices", Gunning writes, "appear rationally designed to achieve a purpose, but suddenly and comically assert a counter-will of their own, thwarting the purpose of the protagonist" ("Mechanisms" 138). In circumventing the outcomes for which they are designed, they represent visual manifestations of the "gag", which Gunning defines as the "acted-out equivalent of a joke" ("Comedy" 142). The comedy of the "crazy machine" as "gag device" has its basis in bathetic action: "The gag suddenly interrupts, or radically redefines, the apparent predictability of an action or system, leaving its original goals shattered and in tatters" (Gunning, "Crazy Machines" 100; "Comedy" 139). If "the

[8] "SD is characterized by rapid, irregular, and aimless involuntary movements of the arms and legs, trunk, and facial muscles." See "NINDS Sydenham Chorea Information Page", National Institute of Neurological Disorders and Stroke, February 2007, www.ninds.nih.gov.

machine normally embodies the instrumental logic of human behaviour" ("Comedy" 140), then the crazy machine represents that which is inefficient, illogical and unintended. Read in the light of Gunning's theorization, the malfunctioning electrotherapy devices in *Electricity for Nervousness*, *Electrified Hunchback* and *The Electric Belt* represent spectacular inversions of the coercive discourses of regeneration and repair which were the mainstay of commercial electrotherapy. In each instance, the primary emphasis is not on the putative inadequacy of the impaired body, but on the defective quality of the treatments which supposedly redeemed it. Such "crazy" electrotherapy devices were shown impeding the mechanisms of medico-commercial discipline.

Other comic electrotherapy shorts from the period were even more specific in their satirical critique of commodity culture. *Electric Insoles*, released in 1910 by the US-based company Essanay, found the market in electric footwear to be a source of particular comic potential. Far from representing the stuff of comic fantasy, electric insoles were in fact marketed widely throughout the US in the early twentieth century. An advertisement in the Sears, Roebuck and Co. Catalogue in 1902 sold them via mail-order, suggesting that they were "a boon to those with poor circulation and cold feet" and that their usage could even prevent "the complaints arising from colds" (fig. 3.7).

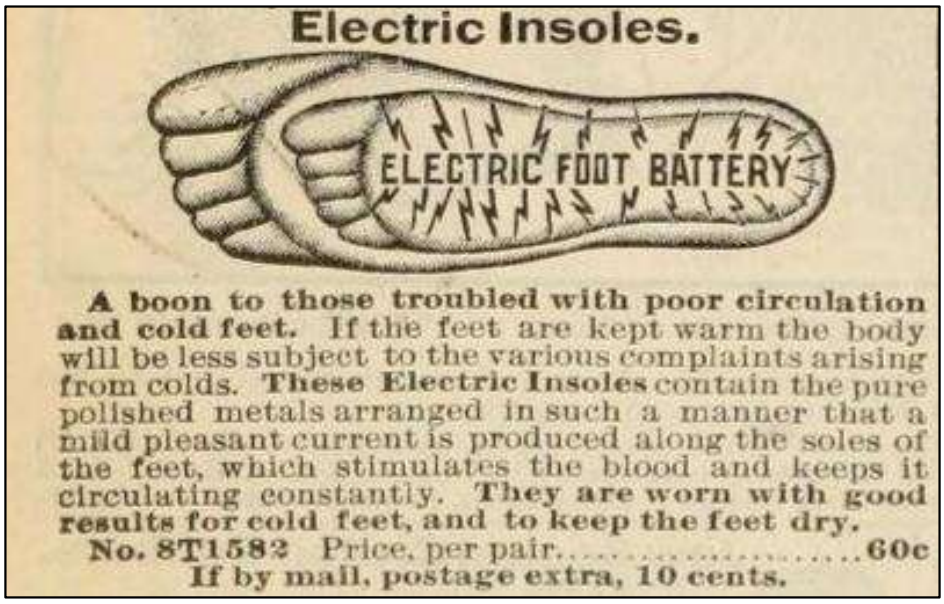


Fig. 3.7 Advertisement for "Electric Insoles", *Sears, Roebuck and Co. Catalog no. 112*, 1902.

The Moving Picture World review of the film spotted the film's satirical intent and echoed it in an all-encompassing list of curable symptoms characteristic of patent medicine advertising: "Have you ever heard of Dr. Wright's Wonderful Electric Insoles? Guaranteed to cure anything the matter with the feet, rheumatism, corns, bunions, also a

powerful vitality stimulant, makes you feel young and giddy and alarmingly lively etc., etc.".[9] The film's protagonist Bill Smith represents the average consumer in the medical marketplace: initially "sceptical" when a friend recommends the electric insoles to ease the pain in his feet, but "anxious" to test their restorative promises. Essanay's film combined the earlier film tropes of the overcharged body, the electrical commodity and the "crazy machine" with the "chase" sequence which, as Jonathan Auerbach has observed, tended to dramatize the circumscription of anti-social energies (see pp. 57-58 of this thesis). Unable to cut the power supply to the insoles, Bill loses control of his movements and their electrical energy bears him destructively onward, in a playful riff on Hans Christian Andersen's mid-nineteenth-century fairy tale of bodily dissociation, *The Red Shoes*. An unstoppable "human whirlwind", he is pursued by a growing number of pedestrians with whom he has collided, and two policemen. The chase ends only when Bill receives assistance in removing the electric soles ("Electric Insoles"). *Electric Insoles* tweaked the conventions of early cinema's "chase" sub-genre to offer a playfully subversive reinterpretation of bodies beholden to institutional regulation. The advertised electrotherapeutic commodity not only fails to live up to its health claims: its entire *raison d'être* is upturned. Instead of restoring the equilibrium of the body, it transforms it into an instrument of farcical disorder.

The 1912 film *A Shock-ing Complaint*, released by British manufacturing company Cricks and Martin, took a similarly direct approach in its engagement with the excesses of electrotherapeutic commodity culture. Chief protagonist Reggie is persuaded by his friends to try an "electric shock machine" in a saloon;

> Something goes amiss with the machinery, and he receives a shock of full strength, which not only affects his limbs to such an extent that he cannot stand still, but everyone he comes in contact with also receives the complaint. Navvies, policemen, lovers and a clergyman are all sent twitching and wriggling on their way. Reggie enters a doctor's to try and get relief, and here imparts the influence to the maid. The doctor administers a strong dose, which in its action causes Reggie to almost wreck the room ("A Shock-ing Complaint").

As in the films discussed above, the "crazy machine" through which this particular gag operates was drawn from consumer experience. Arcade electric shock machines,

[9] See "Electric Insoles", *The Moving Picture World*, vol.6, no.2, 15 January 1910, p.63.

produced by manufacturers in the US and Europe from the 1880s onwards, were common fixtures at penny arcades, country fairs and other spaces of popular entertainment.[10] The machines came in both free-standing cabinet and table-top versions: in both cases, patrons were invited to place a coin in the slot, grasp the handles and gradually pull them apart to receive a dosage of electricity to the body. Manufacturers marketed this explicitly as a salutary encounter, often reproducing the hyperbolized claims of electrotherapeutic advertising directly. The "Electricity is Life" machine manufactured by the Chicago-based Mills Novelty Company in 1904 featured a circular dial with diagnoses corresponding to the level of shock the user was able to withstand. Billed as a "silent physician", it diagnosed "general debility and lost vitality", and a "nervous system in deplorable condition" (fig. 3.8).[11]

Fig. 3.8 Mills Novelty Company "Electricity is Life" arcade machine, c.1904.

[10] Other manufacturers included the Detroit Medical Company in the US and Clerkenwell in Britain. See classicamusements.com. Although the majority of surviving machines were produced in the 1890s and early 1900s, such machines continued to be manufactured throughout the 1920s. See: "Electric Vitalizer", The International Arcade Museum, www.arcademuseum.com, and David Parisi, "Shocking Grasps: An Archaeology of Electrotactile Game Mechanics", *Game Studies*, vol. 13, no.2, December 2013, n.p.

[11] For a closer visual survey of the machine, see Vintage Slots, "Mills Electricity is Life", The Coin-Op Preservation Society, YouTube, 18 November 2009. www.youtube.com.

Divorced entirely from the context of patient-physician encounter, the "silent physician" and other machines like it offered a simulacrum of medical expertise which represented the commercial nexus of therapeutics and recreation. In this sense, they exemplify the commercial appropriation of medical electricity. Exploiting popular understanding of electricity as contiguous with nerve force, they made electrotherapy accessible even to those who were unable to afford electric belts, insoles or other devices. Such machines approached the project of corporeal re-energization as a predominantly economic operation: an exchange of one form of social currency (coin-in-slot) for another (revitalizing electric charge). Their recreational appeal must be read in conjunction with the strength of commercial discourses on electrotherapy which invited users to expect a genuinely healthful outcome.

In his 1889 article in *Scribner's Monthly* decrying the mercantile character of electrotherapy, the neurologist Moses Allen Starr singled out the fraudulent claims of electric shock machines for particular reprimand:

> Not infrequently there is seen upon the streets an electric machine with ringing bells, and a large index adorned with a sign that "electricity is life". The man in charge invites the passer-by to test his power of taking electricity; and to anyone who stops he relates marvellous stories of the strength displayed by someone who has just gone on, and the wonderful cures which he has made...Currents received from such a machine or from any battery in this manner can never be specially beneficial, as they only produce a local effect upon the hands and arms and when these are paralysed the current should be applied to the weak muscles (598-99).

A.D. Rockwell also observed the sales advantage inherent to a widespread belief in the contiguity of electricity and vital force in his 1896 edition of *The Medical and Surgical Uses of Electricity*. "The taking phrase 'Electricity is Life', is constantly used as the war-cry of rival instrument makers, and as the motto of travelling charlatans, on the street corners and at country fairs", he noted, adding that "Whatever future science may unfold, we are now forced to say that not only is there no evidence that electricity is identical with life, but also that the theory that electricity, when applied to the body, is ever directly transformed into nerve force has few if any facts or arguments in its favour" (202).

Whilst Starr and Rockwell sought to disentangle "legitimate" medical expertise on electricity from popular (mis)understandings on the topic promoted by commercial interests, Cricks and Martin's *A Shock-ing Complaint* succeeded in disparaging the

premise of the electric shock machine through comic evocation. The malfunctioning device results in the transmission of electrical current to navy men, lawmen and clergy: the symbolic representatives of social order. The authorized dose of electric current administered by the doctor in a medical context generates the same anarchic effect: the "complaint" of the film's title designates not just corporeal malady, but the fantasized disruptive consequences of patient-consumer grievance.

In his analysis of consumer culture and modernity, Don Slater has emphasized consumers' capacity to "recuperate the material and experiential commodities that are offered to us" (211). Like the "crazy" electrical devices they ridiculed, early cinema's comic electrotherapy shorts were the products of commercial enterprise: the film companies which released them sought to use topical content to attract and delight growing audiences. Yet, they also offered alternative visions of the body electrified in the pursuit of health which transformed and burlesqued commercial designs. If the electrotherapeutic advertisements on billboards, catalogues and in the pages of the illustrated press constructed an image of the body as vulnerable and in need of material intervention, these representations emphasized corporeal stamina and vitality.

Labouring bodies: industrial films

These screen incarnations of ungoverned, irrepressible somatic behaviours were also at marked odds with the forms of bodily movement enshrined in non-fictional filmic contributions to the contemporary "science of work". Inheriting the investigative interest in human movement imaging inaugurated by Étienne Jules-Marey in the 1860s and 1870s, the micro-motion studies of the American industrial engineers Frank and Lilian Gilbreth sought to measure bodily movement through close visual analysis.[12] However, whereas Marey had undertaken his experiments in the pursuit of biological knowledge, the Gilbreths documented workers' activities through film and photography with the aim

[12] "Micro-motion study involved filming a worker's operations against a cross-sectioned background while a chronometer within the motion picture camera's field of vision counted time. By examining the film through a magnifying glass, Gilbreth could determine the times of the worker's motions to the one-thousandth of a second while measuring the length of those motions against the background." See Brian Price, "Frank and Lillian Gilbreth and the Manufacture and Marketing of Motion Study, 1908-1924", *Business and Economic History*, vol. 18, 1989, pp. 1-12 (p. 3).

of determining and prescribing their most efficient movements, and training apprentices to do the same (fig. 3.9).[13]

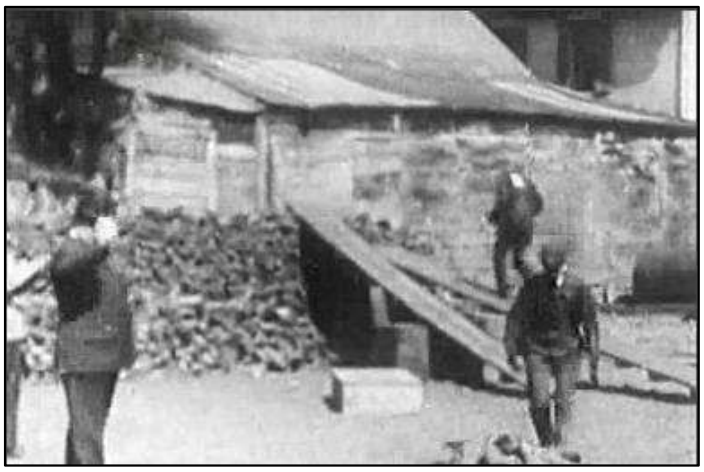


Fig 3.9 Still from *The Original Films of Frank B. Gilbreth, 1910-1924*, showing a pig iron-carrying experiment using the methods of Frederick W. Taylor.

As a contractor in the construction industry, Frank Gilbreth used film to advance the doctrine of scientific management proposed by Frederick W. Taylor, analyzing the body's operations in factory production and distribution, and in manual trades such as bricklaying. Gilbreth's films were supplemented with written summaries of such investigations. In his 1911 book *Motion Study: A Method for Increasing the Efficiency of the Workman*, he charted his quest for "the most economical way of doing work" and promoted close scrutiny of the habits, health and nutrition of workmen as a strategy for managing fatigue. His films targeted both workers and managers, and his methods sparked interest from steel, iron and shoe manufacturers and retail industries (Gilbreth xx, xiii).

The film scholar Scott Curtis has highlighted the ways in which Gilbreth's films not only promoted a new standard of individual labour performance, but also functioned to "visualize an *image* of efficiency" (my italics): a new filmic aesthetic which catered to both the observant eye of the instructive manager, and the spectatorship of the docile worker (93, 90-91). In this capacity, they epitomized the visual logic of industrial films; a sub-genre of *actualité* films depicting real-life production technologies and processes. A number of producers of the comic fiction films considered so far in this chapter also

[13] For more on the Gilbreths' use of photography in the pursuit of efficiency in human movement, see Elspeth H. Brown, *The Corporate Eye: Photography and the Rationalization of American Commercial Culture, 1884-1929*, John Hopkins UP, 2005, pp. 65-118.

produced industrial films throughout cinema's transitional era.[14] These shorts, often sponsored by the companies they featured, typically showed the production of everyday items, including rubber, lumber, steel and tobacco, celebrating and promoting mechanized manufacturing and its proliferation of commodities (Peterson 322). They typically prioritized the technologies and processes they featured over the human agents orchestrating their production.

There is no evidence that Gilbreth's films were ever screened in nickelodeons or picture palaces, though the scale of systematized labour and scientific management practices make it likely that the visual standards of workplace comportment they promoted would have been familiar to a good proportion of blue-collar workers. Industrial films, however, were a staple genre of early cinema, and recent scholarship indicates that the particular demographic they depicted also represented a large portion of cinemagoers during this period. The class, gender and ethnic make-up of early cinema audiences has been a central preoccupation of film scholars since the 1970s.[15] Work in this area by a number of researchers has emphasized the diversity of early cinemagoers, whose spectatorship was facilitated by the low-cost accessibility of the movies. Lee Grieveson has emphasized "important differences between rural, small town, and urban audiences", but argues that in both Britain and the US, "working-class groups were identified as central to the audience" ("Audiences" 45). Scholarship on British contexts by Low (Vol. 2), Hiley, and McKernan ("Diverting") has similarly emphasized the appeal of cinema to the working-classes.[16] Likewise, research by Merritt, Rosenzweig, Singer, King and Sklar (*Movie-Made*) has offered evidence of cinema's popularity among blue-collar workers and the working classes in the US – "the immigrant, the working

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[14] See, for example: *Entrance to Union Stockyards* (Selig Polyscope Company 1901), *A Day in the Hayfields* (Hepworth Manufacturing Company 1904), *The Making of a Cricket Bat* (Cricks and Martin 1907), *The Cotton Industry* (Hepworth Manufacturing Company 1908), *A Day in the Life of a Coal Miner* (Kineto 1910), *Making Christmas Crackers* (Cricks and Martin 1910).

[15] For an evaluative overview of the historiography of this debate, see Robert Sklar, "Oh! Althusser! Historiography and the Rise of Cinema Studies" in *Resisting Images* pp. 19-31.

[16] "Heavily industrialised cities had by far the highest proportion of picture theatres per head, as indeed would be expected…the film catered above all for the industrial worker". Rachael Low, *The History of the British Film, 1906-1914,* Vol. 2, George Allen and Unwin, 1949, p. 24. "The purpose-built cinema attracted 'whole families of the industrial classes'", Nicholas Hiley, "At the Picture Palace: The British Cinema Audience, 1895-1920" in *Celebrating 1895: The Centenary of Cinema*, edited by John Fullerton, John Libbey, 1998, pp. 96-103 (p. 101). "Cinema was, fundamentally, the poor man's theatre, and that coloured its social acceptance and determined its prices", Luke McKernan, "Diverting Time: London's Cinemas and Their Audiences, 1906–1914", *The London Journal*, vol. 32, no. 2, July 2007, pp. 125-44 (p. 135).

man…and the unemployed" (Merritt 63).[17] There is therefore sufficient scholarship to support the hypothesis that considerable portions of cinema audiences who consumed industrial films would have encountered their images of systematized labour with experiential knowledge of their subject matter. In their factories and trades, such workers would have been subject to the reorganization of work practices demanded by the industrial revolution and its disciplinary discourses on fatigue and idleness.[18]

The rationalization of labour did not go unnoticed, or unchallenged. In 1911, a strike by workers at the Watertown Naval Arsenal, MA., in objection to the introduction of Taylorism, led to a widely-reported Congressional hearing which eventually ruled against the use of scientific management practices at federal sites (Earls 8). British workers also resisted its implementation (Whitston "Worker Resistance"). In an article published in 1917 in the *Quarterly Journal of Economics*, Robert Hoxie, a professor of Political Economy, drew on the findings of his Commission on Industrial Relations to cite "the persistent and growing opposition of unionism to scientific management". According to his verdict, scientific management "condemns the worker to a monotonous routine and tends to deprive him of thought, initiative and joy in his work and to destroy his individuality and inventive genius". He also reported that it led to "over-production and unemployment" (71, 65). Moving images, from Marey's chronophotography to Gilbreth's micro-motion studies, had proven instrumental to the agendas of modern productivism in scrutinizing corporeal kinetics anew. If, however, these forms of cinema functioned to reinforce and perpetuate the dominant discourses, others offered alternative visual meditations on the regeneration of physical labour.

Early cinema's comic labouring bodies

Industrial films showcasing the marvels of modern production appeared on the same variety programmes as early fictional comic shorts which also featured bodies at work. Employing similar tropes and mechanisms to the satirical electrotherapy films explored

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[17] Russell Merritt cites various contemporary sources estimating that the majority of cinema audiences comprised blue-collar workers. See Merritt, "Nickelodeon Theaters, 1905-1914: Building an Audience for the Movies", in *The American Film Industry*, edited by Tino Balio, University of Wisconsin Press, 1976, pp. 59-79 (p. 63). Rob King describes a typical cinema audience of "laborers, recent immigrants, working-class families, and lower middle-class salaried workers". See *The Fun Factory: The Keystone Film Company and the Emergence of Mass Culture*, University of California Press, 2008, p.3.

[18] John Burnett gathers accounts of the subjective experiences of work by labourers and skilled workers in response to these changes in *Useful Toil: Autobiographies of Working People from the 1820s to the 1920s*, Routledge, 1974.

above, these comic shorts developed a counterpart aesthetic of animated bodies whose excess energies liberated them from regimented control.

Liquid Electricity; or The Inventor's Galvanic Fluid was released by Vitagraph: the largest domestic film company in the US, known for a "fast-paced, energetic style" (Musser, *Emergence* 467). The film synthesized a general understanding of electricity's excitant effect on the body with circulating discourses on fatigue, idleness, slow-working and labour efficiency to produce a ludic take on disciplinary management of the medicalized, industrialized body. It relied on a metaphor of electricity as a liquid "current" which "runs" or "flows". By the end of the turn of the century, this conceptual shorthand, prevalent in scientific writing, popular science and public commentary, was so convenient that its literal sense had overtaken its figurative use.[19] Vitagraph's film depicted an inventor named Professor Watt, who administers electric fluid to various parties with a large syringe: a catalytic action which causes them to undertake their jobs at accelerated speed. Road cleaners sweeping at a leisurely pace outside the professor's window are galvanized into pursuing their task with a new urgency. When a group of sailors idling outside a window receive a dose, they instantly leap into action and work together to push a barrel down the dock (fig. 3.10).

[19] Such was the extent of this literalization that Thomas Edison attempted to disambiguate: "Electricity, by the way, is properly merely a form of energy, and not fluid." See "Vital Energy and Electricity", *Scientific American*, vol. LXV, no. 23, 5th December 1891, p. 356. Professor O.J. Lodge delivered a lecture to a large audience at the Royal Institution in London during which he reiterated that electricity had only an analogous relation to a liquid. See "The Nature of Electricity", *Scientific American*, vol. LII, no. 10, 7th March 1885, p. 149. For other contemporary references along the same lines, see W.S. Hedley, *Therapeutic Electricity and Practical Muscle Testing*, P. Blakiston's Son & Co., 1890, p.7., and A.D. Rockwell, *The Medical and Surgical Uses of Electricity*, William Wood and Company, 1896, p. 2.

Fig. 3.10 Still from *Liquid Electricity; Or, The Inventor's Galvanic Fluid*, Vitagraph, 1907.

Next, three lounging lifeguards are prompted to rescue a drowning woman on a beach. The inventor subsequently prods a yawning shopkeeper, who then dispenses his goods doubly-quickly, a workman drowsily painting a fence, and a group of builders on a construction site. These assorted lethargic bodies recall the pathologized forms of the neurasthenic, the sufferer of fatigue, and the "malingering", or "underworking" labourer. Their subsequent electrifications summon the stimulant effects of electrotherapy and their frenzied labours echo trade union claims that scientific management represented "a cunningly devised speeding-up and sweating system" incentivizing "exceptionally rapid workers" (Hoxie 65, 76). Between the 1890s and the First World War, changes to the organization of work initiated a "frenzied pace", as "intensity and regularity came to dominate the work experience" (Stearns 193).[20] The screened bodies in *Liquid Electricity* exhibit this feverish locomotion, but their exaggerated movements do not project a serious vision of corporeal energies purposefully applied. Instead, they establish a general tone of parodic irreverence. Although the individuals in each scene are transformed into paradigms of organic efficiency, their hyperactive states set them at odds with the environments in which they operate. This disjunction between disciplinary expectation and outcome operates through a common effect of slapstick performance: "the body's relationship to the external world is made strange" (Stott 89). The unattainability of the

[20] For a discussion of changes in the rhythm of work in industrial settings in Britain, Belgium, Germany and France during these years, and workers' reactions to this, see Chapter Six in Stearns, *Lives of Labour: Work in a Maturing Industrial Society*, Holmes and Meier, 1975, pp. 193-228.

regenerative ideal is further underscored by the film's technical conceit: this vision of an accelerated society in which social and industrial tasks are performed at maximum capacity is, after all, an illusion, created by undercranking – alteration to the speed at which the film strip runs through the cinematic apparatus.[21]

A 1908 feature piece on Vitagraph in *The Moving Picture World* cited *Liquid Electricity* as one of the company's most successful films in recent years ("Interviews with Manufacturers"). Such was the appeal of its subject matter that a sequel titled *Galvanic Fluid; Or, More Fun with Liquid Electricity*, soon followed. The second instalment reproduced the same crowd-pleasing formula of the first film: the inventor's liquid electricity wreaks havoc with a nursemaid, a chauffeur and a trolley car driver. In addition, electrotherapy is represented as a satirical miracle cure for geriatric disability when a dosage of liquid electricity cures "four very decrepit old men, hobbling along on sticks and crutches", who subsequently "dance, kick up their legs, throw the crutches away, play leapfrog and then leap down the street" ("Galvanic Fluid" 103, see fig. 3.11). Another scene showed a number of policemen who attempt to intervene electrified into a compulsive drill-call of marching and countermarching, and a series of leapfrogs over their crouched captain.

Fig. 3.11 Still from *Galvanic Fluid; Or, More Fun with Liquid Electricity*, Vitagraph, 1908.

[21] Dan Kamin notes that "Undercranking was ubiquitous in the silent film era. Cameras were hand cranked and projectors had rheostats…In general, dramas were expected to be shown at a speed only slightly faster than life, except for chase and fight sequences, which were sped up." See *The Comedy of Charlie Chaplin: Artistry in Motion*, Scarecrow Press, 2008, p. 32.

Gaumont's 1909 film *The Electric Policeman* (released in the US as *Policeman in Action*)[22] shared *Galvanic Fluid*'s irreverent depiction of the forces of social order subjected to the disorderly effects of electrical stimulation. An officer too fatigued to apprehend a careless cyclist is enticed by a billboard advertisement into purchasing a pair of electric boots from a nearby shop. As the boots run out of control, the electrified policeman is chased across the streets by four of his colleagues, who find themselves unable to prevent him demolishing a wall and a pair of wooden gates. Gaumont's film inverted the generic conventions of the chase film by depicting the policeman – symbol of authority and social control – as the very source of the disruption he is employed to manage. His purchase of an electrical commodity to overcome his fatigue and boost his labour-power not only fails to live up to its promises; it also facilitates unruly and destructive behaviours.

Electric Boots (Pathé-Frères, 1911) used the trope of electrified footwear to offer a combined critique of medicalized and industrialized bodies.[23] In its depiction of a flourishing trade in pairs of "electric boots", it connected the market in electrotherapeutic commodities with disciplinary projects of workplace management. As a long line of customers waits outside a shop advertising "Chaussures Électriques" promising a speed of "120 kilometres à l'heure" to the wearer, those newly-fitted with the boots exit in a rushed procession. They subsequently take up their daily tasks with increased fervour in a series of brief scenes which conspicuously emphasize profitable labour on a commercial scale. Street traders speedily offload their goods from wagons to similarly-enthused clientele. Manual labourers are shown digging foundations, building walls, assembling the wooden frontispiece of a building, tiling a roof and decorating the interior of a house, all with accelerated efficiency. The catalysed worker in this film represents the economically-productive body, activated by its consumer appetite. But just as in *Liquid Electricity*, these galvanized bodies are the stuff of fantasy, their profitable alacrity facilitated by the film's projection speed.

Situating the film in its particular economic and social contexts further underscores its irony. Taylor's *The Principles of Scientific Management*, published in the

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[22] See "Policeman in Action", *The Moving Picture World*, vol.4, no. 16, 17 April 1909, p. 476.

[23] The film's original title is *Le Marchand de Chaussures Électriques*. For contemporary reviews of the film, see "Electric Boots", *The Bioscope*, no. 230, 9th March 1911, p.44; "Electric Boots", *The Moving Picture World*, vol. 9, no. 10, 16th September 1911, p. 818.

same year *Electric Boots* was released, described the growth of the shoe industry as one of the primary success stories of mechanization:

> The introduction of machinery for doing every element of the work which was formerly done by hand has resulted in making shoes at a fraction of their former labour cost, and in selling them so cheap that now almost every man, woman and child in the working-classes buys one or two pairs of shoes per year, and wears shoes all the time, where formerly each workman perhaps bought one pair of shoes every five years, and went barefoot most of the time, wearing shoes only as a luxury (16).

The successful stimulation of consumer appetite had in turn generated an expanded trade: "The demand for shoes has so increased", Taylor added, "that there are relatively more men working in the shoe industry now than ever before" (17). Taylor did not address the consequences of this rise in production for individual workers, but others did. In 1912, Josephine Goldmark, Chairman of the Committee on Legal Defence of Labour Laws of the US National Consumers' League, published the findings of a five-year study into labour conditions, which drew on statistics from European and American factory inspectors and the testimony of health officials and economists. *Fatigue and Efficiency: A Study in Industry*, emphasized the physiological cost of revised labour management strategies driven by new goals in human productivity and efficiency. Goldmark attended to shoemaking from a humanist perspective, citing it as a particular example of an industry demanding new levels of intensified labour from its workers. She reported that workflows for stitching and trimming required employees to process 2600 pairs of shoes or boots daily, tasks notable for their speed, and "the indefinite repetition of dull, mechanical movements" (67). Audiences encountering the feverish consumer desire for electric shoes and their associations with accelerated labour in *Electric Boots* then, would have been invited to recognize both of these as features of their current socio-economic environment.

Revamping the tramp in literature and film

In the final film from the cluster of shorts I discuss in this chapter, the comedic physicality of the electrified body intersected with discursive interest in galvanizing the arrested energies of the tramp population. Like Pathé's 1909 *L'incendiaire/Careless Tramp*, *Dusty Dick's Awakening* – produced by the British film company Cricks and Martin in 1912 and distributed in the US as *Dusty Gets a Shock* – invoked the widespread stereotype of

the tramp as idle, unproductive and socially-disruptive.[24] But unlike this earlier film, it also celebrated the tramp's subversive elusiveness. In so doing, it was one of a number of cultural forms which participated in the partial rehabilitation of the figure of the tramp in the popular imagination which had been underway since the last years of the nineteenth century. *Dusty Dick*'s particular contribution is best understood within the broader context of these discursive reformulations, which sought to recuperate the tramp from the negative rhetoric and representations sampled in Chapter One of this thesis. Accordingly, before analyzing the film itself, I present a brief account of this cultural shift.

In literature, autobiographical accounts of tramping by "tramp-writers" encapsulated the ambiguity of public discourse on the vagrant. Essays by the American sociologist and writer Josiah Flynt on his extensive experience of life on the road from a young age were published by *Harper's Weekly*, *Atlantic Monthly* and *The Century* between 1893 and 1899, before their release in a single volume titled *Tramping With Tramps*. Flynt's conflicted writing exemplified wider inconsistencies in accounts of the tramp: he judged them to be "almost always the victims of liquor and laziness" ("How Tramps Become Tramps" 941) but also testified to their geniality, politeness and philosophical nature (*Tramping With Tramps* 264-65). Welsh writer W.H. Davies' offered a predominantly sympathetic perspective on tramping in *The Autobiography of a Super-Tramp*. Published in 1908 under the patronage of George Bernard Shaw, it described his life as a vagrant in the US, Canada and Britain in the 1890s. In an article titled "How it Feels to Be Out of Work" published in *The English Review* that same year, Davies suggested that "real beggars" comprised only one part of the tramp population: the rest were disenchanted migrant labourers, whose work ethic had been worn into indifference through unemployment.[25]

This view of the tramp as an economic phenomenon found extensive expression in the work of the American writer Jack London. In March 1894, London joined thousands of unemployed workers on a march to Washington D.C. led by the businessman

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[24] "Dusty Gets a Shock", *The Moving Picture World*, vol. 11., no.4, 27 January 1912, p.338.

[25] Other "tramp-writers" who offered largely rehabilitative accounts of the tramp included William Dean Howells, whose novels situated homelessness and poverty within an economic contexts and Walter Wyckoff, lecturer in sociology at Princeton University. For more on Howells, see Kenneth L. Kusmer, *Down and Out, on the Road: The Homeless in American History*, Oxford UP, 2001, pp. 170-72. Wyckoff's publications included *The Workers: An Experiment in Reality*, Charles Scribner's Sons, 1897 and *A Day with a Tramp, and Other Days*, Charles Scribner's Sons, 1901.

Jacob Coxey, to lobby the government into creating more jobs.[26] The following month, London took to the road, recording observations on itinerant life in his diaries. In these pages, he conceived of vagrancy as a social category tied to the vicissitudes of the labour market and condemned the damage industrial capitalism visited upon the labouring body. London identified tramps not as bums or criminals, but as former "sailormen, soldier-men, labor-men, all wrenched and distorted and twisted out of shape by toil and hardship and accident" ("How I Became" 99). He found among them "honesty", "good-heartedness" and a majority who were "willing and eager to work" ("The Tramp Diary" 58). London's tramp-writings have received little critical attention, despite the publication of this material in both the US and Britain throughout the first decade and a half of the twentieth century.[27] The short 1901 poem "The Worker and the Tramp", written as the imaginary address of a labourer to a vagrant, offers a flavour of the literary strategies London employed in articulating his socioeconomic critique:

> Heaven bless you, my friend –
> You, the man who won't sweat;
> Here's a quarter to spend.
>
> If you did but mend,
> My job you would get; -
> Heaven bless you, my friend. –
>
> On you I depend
> For my work don't forget; -
> Here's a quarter to spend.
>
> Your course I commend,
> Nor regard with regret; -
> Heaven bless you, my friend.

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[26] See pp.60-61 of this thesis. London wrote of his experiences of the march in his diary and in his 1907 essay "Kelley's Army". See *Jack London on the Road: The Tramp Diary & Other Hobo Writings*, edited by Richard W. Etulain, Utah State UP, 1979, pp. 57-59.

[27] In his edited collection of London's writings, Richard W. Etulain details the publication rejections and acceptances of London's tramp writings. Several were published in American magazines such as *Ainsleee's Magazine*, *Arena*, *The Comrade*, *Cosmopolitan Magazine*, *Saturday Evening Post*, *Wilshire's Magazine* and in British publications including *Cassell's Magazine*, *Lady's Realm* and *Westminster Gazette*.

My hand I extend,
For I love you, you bet; -
Here's a quarter to spend.

Ah, you comprehend
That I owe you a debt;
Heaven bless you, my friend,
Here's a quarter to spend (87-88).[28]

The expressive solidarity of this invocation rejects discourses which sought to position the "idle" tramp in binary opposition to the industrious worker. It counterposes the language of moral discourse with an understated pragmatism: if the tramp were to reform his character and action ("mend"), the competitive labour pool would compromise the speaker's own employment status ("my job"). This line suggests that such surplus labour is an inevitable consequence of market capitalism, and that "worker" and "tramp" are not distinct social identities but subject to arbitrary circumstance. From this perspective, bestowing the tramp with a quarter is an act of charity which devalues the work economy though which it was obtained. Giving something for nothing, the worker further facilitates the tramp's freedom from that economy. The poem's fixed form (a villanelle) reinforces this sense of stasis: any possibility that the tramp will "mend" is subsumed within the worker's refrain of endorsement ("Heaven bless you") and expedition ("Here's a quarter").

London restated this understanding of vagrancy as the inevitable condition of industrial capitalism in more explicitly socialist terms in his essay "The Tramp", written in 1901 and published in three parts in 1904. Countering the opinion that vagrancy was the wilful condition of those unwilling to undertake honest work, he described a "floating population" which was the "by-product of economic necessity", born from new patterns of displaced labour and the demonization of human inefficiency (123). The majority were "discouraged workers", he argues, whose status was tied directly to fluctuations in production (128, 129). In this sense, they represented both the "human waste" of the capitalist apparatus and "a check upon all employed labour" (135, 126). Within these parameters, London reconfigured tramping as a noble act through which "discouraged workers" sought to re-claim some level of agency, deciding to "voluntarily withdraw themselves from the struggle for work". The tramp, London concluded, is "the scapegoat

[28] First published in the American socialist periodical *The Comrade*, October 1901.

to our economic and industrial sinning…Society made him. He did not make himself" (134, 136).

As the rehabilitative tramp-writings of Josiah Flynt, W.H. Davies and Jack London jostled for discursive space with a more cynical rhetoric on the "tramp problem", early cinema also offered more sympathetic screen portrayals of the figure which departed conspicuously from the stereotype. In some cases, the two versions occupied the same screen space. The "footsore and lonesome" tramp in Pathé-Frères' 1908 film *The Vagabond* is approached by a fellow tramp, who invites him to rob a nearby house.[29] The vagabond decides instead to warn the owner, but is shot on approach by the farmer, who mistakes his intentions. Realising his mistake, the farmer nurses the vagabond back to health and rewards him financially for his honesty. *The Moving Picture World* commended the film to its readers as "A fresh development of the possibility of good which lies dormant in every man, even a vagabond" ("The Vagabond" 5 Dec). Essanay's *The Tramp's Story* offered a similarly soft-hearted vision in its depiction of a hard-working family man who takes to the road in order to track down the man who eloped with his daughter and then jilted her. *The Moving Picture World* recommended the picture in part on the basis of its humanist portrayal, musing that "There never was a more picturesque character in all the world than the American tramp, yeggman, hobo" ("The Tramp Story").

A picaresque view of the tramp would of course find its artistic zenith in the work of Charlie Chaplin. In recent decades, scholars have sought to situate Chaplin's tramp films within their particular institutional and economic contexts of modernity, mechanization and industrialization and highlighted Chaplin's embodied comic critique of work and industry concomitant with these changes (Cresswell; Gunning "Chaplin and the Body"; Musser, "Work"; North). The inauguration of Chaplin's emotionally nuanced depiction of the tramp, who first appeared in Keystone's *Kid Auto Races at Venice* (1914), has come to represent a break with earlier screen incarnations of the character. But an account of the comic tramp as a symbol of anti-industrial sentiment in early cinema which anticipated the coherent artistic achievement of Chaplin's output has not yet been written. Whilst such an account is beyond the scope of this thesis, in the final section of this chapter, I want to offer *Dusty Dick's Awakening* as a gesture towards such a project.

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[29] "The Vagabond", *The Moving Picture World*, vol. 3, no. 22, 28 November 1908, p. 434. The film's original title was *Le Vagabond*. For other contemporary trade journal reviews of the film, see: "The Vagabond", *The Bioscope*, no. 111, 27 November 1908, p.19, "The Vagabond", *The Moving Picture World*, vol. 3, no. 23, 5 December 1908, p. 448.

Cricks and Martin's 1912 film invited its audiences to celebrate the compulsive waywardness of the subversive tramping body as a form of relief from the constraints of modern work practices.

In the film's opening scene, a police officer forces a lethargic vagrant taking a nap in the street to move on. The tramp returns cautiously to re-claim his spot, before the policeman notices this and finally sees him off with a kick to the ribs. When the tramp re-settles close to a man-hole, the engineer working there shocks him with two live wires. Jolted awake, he leaps into the air and bounds through the streets in a series of acrobatic somersaults. Instead of putting his new-found energy to productive use, however, the uncontainable Dusty transfers the electrical charge to a number of pedestrians, all of whom are temporarily liberated from their various occupations. His uncontrolled mobility across a range of public spaces provides the narrative thrust of the film, as a series of cuts follow his erratic movements and the movements of those he "infects". A man sweeping the road in the foreground of one shot receives an electrical charge from Dusty and the two pirouette aimlessly together. A fruit-seller and the driver of a horse and cab are similarly sidetracked from their tasks. This unbinding of arrested energies results in the same contagious physical anarchy featured in the earlier films, but the inclusion of a tramp as the central subject of the film contributes an additional discursive weight. The whirling kinetic chaos of this fictional vagrant recalls the unrestrained mobility of the real life tramp population, but in this context, such freedom of movement is the source of comedy, not a cause for concern. Dusty's electric "awakening" does not result in moral reinvention, or purposeful action, but in a cathartic release from the strictures of social and economic expectation.

*

The flailing, uncontrolled movements of animated electrified bodies in the early fiction films discussed in this chapter constituted a comic counterpart to discursive strategies of re-energization which targeted fatigued patients, slow workers and idling tramps. Their aesthetic of ludic corporeality was both the product of, and a response to, a growing emphasis on the energetic potential of the individual body. Though they traded on common stereotypes, in depicting the unruly movements of bodies otherwise tightly controlled, they provided fantasy spaces in which the regenerative power of electricity became the instrument of ludic disorder. Their playful inversions of the social order, often staged in the communal spaces of street and marketplace, recall the carnivalesque behaviours theorized by the philosopher Mikhail Bakhtin; assertions of collective

corporeal energies which eschew the models of "isolated biological individual" and "private, egotistic 'economic man'" (19).[30] That is not to say, however, that such films represented a coherent left-wing ideology, or a radical call to anti-authoritarian action. For Bakhtin, the carnival spirit offered a temporary release of social tensions and was ultimately subsumed by the established order. It is in this sense that carnival laughter is ambivalent: "It asserts and denies, it buries and revives". Yet, the playful inversions of early cinema's electrified bodies correspond with carnival's capacity to scrutinize and expose the structures of the social order and to reveal "the gay relativity of prevailing truths and authorities" (12, 11). Defamiliarizing the material conditions of daily life, such films drew attention to the restrictions placed on human activity in a diverse range of contexts. In so doing, they sought different forms of visual attention to those commanded by the electrified spectacles in popular science displays and in illustrated advertisements for electrotherapeutic commodities. They revelled in representations of corporeal experiences which departed markedly from the regularized comportment of the scientifically-managed body.

Cinema during this period was an expanding enterprise: an industry bound up with the same strategies of commercial enterprise as those explored throughout the first part of this thesis. Yet the proliferation of dedicated exhibition venues created public spaces in which the experiences of modernity could be explored communally and cathartically. Luke McKernan has emphasized a "public sense of ownership of the cinema, of the freedom to enjoy it under conditions seemingly entirely under their control" ("Diverting Time" 139). Cinema-going was a staple leisure activity for the working-classes, a practice free from the confines of workplace responsibility and restriction. Within this context, the carnivalesque antics of electrified screen bodies were designed to provoke a laughter of recognition arising from social observation. More than this, their comedy also reproduced the liberation from corporeal constraint so jubilantly depicted on screen. Miriam Hansen has underscored the affective basis of film comedy's popularity, arguing that "the reason slapstick comedy hit home and flourished worldwide was not critical reason but the films' propulsion of their viewers' bodies into laughter" ("The Mass Production" 71). By inviting audiences to make direct comparisons between the energetic movements of screen bodies and those of their own bodies, these films

[30] Bakhtin's concept of "carnival" is rooted in his analyses of the work of Francois Rabelais and the carnival phenomenon in Medieval Europe. Though historically specific, a range of critics have found scope for transhistorical applications of Bakhtin's theory to a broad range of social and cultural practices. See Simon Dentith, *Bakhtinian Thought: An Introductory Reader*, Routledge, 1995, pp. 85-87.

facilitated alternative forms of embodied experience to those defined and demanded by medical, commercial and industrial discourses. The physical acts of laughter inspired by early cinema's comic electrotherapy shorts – eruptive and convulsive – can thus be read as the real-life manifestations of their fictional corporeal liberations. For Bakhtin, the carnival spirit summoned the "positive regenerating power of laughter" (45). We might, then, read the giggles and chuckles that cinema's electrified bodies sought to evoke as the vectors of an alternative project of social re-energization: one rooted not in disciplinary transformation, but in activation of the corporeal pleasures of physical abandon.

Part II

Part I offered accounts of fatigue, neurasthenia and idleness as discursive categories of corporeal inactivity expressive of a general concern about a widespread decline in bodily energies. Across these contexts, the term "energy", applied in relation to the body, was sometimes used as a generalized term to describe a corporeal condition of potentiality; an inherent but unrealized capacity for healthful – and productive – exertion. In other instances, "energy" encoded a specific locus, or manifestation, of this corporeal function, corresponding with contemporary understandings of "nerve-force", "vital force" and even electricity. Examining medical and cultural texts alongside each other, Chapters One to Three illustrated the ways in which varied materials shaped, reflected and reworked ideological formations of enervated and underperforming bodies re-energized by new medical treatments, industrial management strategies and labour legislation.

Part II inherits the interest of Part I in bodily "energy" as a corporeal power that is variously possessed, exercised, misspent, lost and reacquired. It explores representations and discussions of old age as a condition of dissipating energy, compromised physical productivity and social inutility, alongside the mobilizing and monetizing strategies of the medical marketplace, the industrial workplace and the cultural imagination operating in response to this. It consists of three chapters. Chapter Four, "Expended Energies", explores contemporary attitudes towards the productive and reproductive limitations associated with the ageing process. In addressing negative conceptualizations of "spent" men and "faded" women in distinct sections, this chapter also lays the groundwork for Chapter Five, "Rejuvenated Male Energies", and Chapter Six, "Rejuvenated Female Energies". These two chapters analyze medico-commercial practices and cultural narratives of "rejuvenation" as discursive responses to the diminution of the body's labour-power and sexual exuberance across the life-course, shaped in distinctive and traceable ways by the prevailing gender ideology.

Chapter Four

Expended Energies

In his 1877 advice manual *Plain Facts About Sexual Life*, the American health reformer John Harvey Kellogg offered the general reader a number of prescriptions for sexual conduct. Seeking to highlight "the great prevalence of sexual excesses of all kinds", the book described the symptoms and consequences associated with a wide variety of sexual behaviours, from "unchastity" and prostitution to the "solitary vice" of "self-abuse". Widely discussed in the press, *Plain Facts* was a resounding success, selling over 100,000 copies in multiple editions between 1879 and 1886 (Kellogg vi-vii). Soon after its initial publication, Kellogg reissued the book under the new title *Plain Facts for Old and Young*. The new name reflected the ordering principles of the book's structure, divided into sections aimed at readers of various ages. It also underscored the writer's unifying concern with the imprudent expenditure of sexual energy – implicitly defined within the book's pages as seminal potential (for men) and sexual desire and activity outside marriage (for women). Kellogg's treatise embedded anxieties about the wastage incurred by sexual transgressions within a teleology of overall decline across the life course. This entropic view also informed the manual's perspective on "The Hygiene of Old Age". In "advanced age", Kellogg advised, "the vital machinery is worn and weakened, the vitality at a low ebb", and as a general rule, "the waste of the body preponderates over the repair" (615, 616). Identifying the reproductive organs as the seat of "that most marvellous of all vital processes, the production of human beings" (109), Kellogg prescribed restraint and economy in all matters relating to "senile sensuality" (115). The body's vital forces should be "economised", he suggested, to prevent stimulation "weakening the hold of life and shortening its duration" (616).

In its insistence on old age as a period of diminished sexual capacity, *Plain Facts* illustrates a broader set of discussions from its late nineteenth-century moment converging on the functionality of the ageing body. Throughout this period, old age became a topic of growing concern and new visibility in politics, medicine, economics and culture. The introduction of occupational pensions focused new attention on the definition of old age in chronological terms, and the lower age band for this in civic and

legal contexts ranged from around 40 years old to 70 years old.[1] These debates were contemporaneous with new developments in the theory and practice of medicine in relation to the ageing body. In 1881, Jean-Martin Charcot's *Clinical Lectures on the Diseases of Old Age* was published simultaneously in London and New York. His findings on anatomical degeneration informed the emergence of geriatrics and gerontology in the early twentieth century: new fields of study dedicated to the physiological, social and psychological aspects of old age as a distinct phase of life.[2]

Historians of ageing have contextualized these developments in relation to demographic changes and a proportional increase in the percentage of aged men and women in both the British and American populations from the early nineteenth century onwards (Johnson 5-6; Achenbaum *Old Age* 58-66). Beginning in the 1970s, a body of cross-disciplinary scholarship in history, sociology and political science has documented the ways in which ageing was reconstituted during this period as both a series of physiological changes and a socially constructed category of existence (Achenbaum; Quadgano; Cole, "Prophecy"; Haber; Katz, *Disciplining*; Thane). A portion of this research has sought to emphasize that the movement from a predominantly agrarian economy to an industrial one throughout the nineteenth century had particularly wide-ranging impacts for the aged. For example, opening her study of *The Victorians and Old Age*, Karen Chase observes the extent to which "physical capacity is closely bound to economic and social power" (1). Similarly, examining the "reconstruction" of old age in America, Thomas R. Cole has described the "scientific management of aging" during the late nineteenth century as part of "industrial management's drive to exact greater quantities of output from smaller quantities of labor time" (365, 364). Indeed, in his study

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[1] In 1898, eligibility for pensions in Britain was set at age 65. See "Old-Age Pensions", *The Spectator*, 23 July 1898. Increasing numbers of private pension schemes were joined in 1908 by means-tested state pensions for those over 70 years of age under the Old Age Pensions Act. There were 13 private pension plans in existence in the US in 1899. By 1919, this number had grown to 300, and covered approximately 15 percent of the country's salaried employees. See Stephen A. Sass, *The Promise of Private Pensions: The First Hundred Years*, Harvard UP, 1997, p. 54. For varying definitions of old age in chronological terms, see Janet Roebuck, "When Does 'Old Age' Begin? The Evolution of the English Definition", *Journal of Social History*, vol. 12, no. 3, Spring 1979, pp. 416-428 (pp. 420-21). The Friendly Societies Act of 1875 and subsequent amendment in 1887 defined old age as "any age after 50" and used this as the basis for their work in poor relief amongst the elderly. See *Report of the Royal Commission on the Aged Poor*, H.M.S.O., 1895, p. lxii. (c.7684).

[2] The term "gerontology" and its initial elaboration have been attributed to the Russian biologist Élie Metchnikoff in a book published in 1903. See D.J. Martin and L.L. Gillen, "Revisiting Gerontology's Scrapbook: From Metchnikoff to the Spectrum Model of Aging", *The Gerontologist*, vol. 54, no. 1, February 2014, pp. 51-58. "Geriatrics" entered the medical lexicon in 1909. See I.L. Nascher, "Geriatrics", *New York Medical Journal*, vol. 90, no. 8, August 1909, pp. 358-59.

of poverty in old age published in 1899, the English philanthropist Charles Booth observed that "modern conditions of industry do not favour the aged. Work is driven faster, and needs more nerve, and its changing methods continually displace the old" (15). Ageing – like fatigue, neurasthenia and idleness – represented the prospect of inactivity, incapacity and inefficiency at odds with the directives of industrial capitalism.

In the introduction to their recently published edited collection *Interdisciplinary Perspectives on Nineteenth-Century Culture*, Katharina Boehm, Anna Farkas and Anne-Julia Zwierlein have argued that "the boundaries of nineteenth-century discourses about old age were porous: ideas were trafficked – and in the process adapted and reconfigured – among different fields of knowledge and forms of cultural expression" (2). A thorough critical examination of this dynamic network of ideas requires these discourses to be brought into conversation with each other. With this in mind, this chapter draws selectively from a wider body of both primary and secondary materials from the History of Medicine, Labour History, Literary Studies and Early Cinema studies. It traces the written and visual language of the ageing body as the site of expended energies, demonstrating the ways in which discursive constructions of old age as a period of economic, social and sexual obsolescence were characterized by a broad metaphorical understanding of the body as a closed system of finite energies which dissipate over time.

Entropy and atrophy

Addressing the topic of "The Conservation of Energy" in 1875, the Scottish physicist Balfour Stewart framed corporeal atrophy across the life-course in thermodynamic terms: "Our bodies are, in truth, examples of an unstable arrangement of chemical forces, and the materials which composed them…are yet pre-eminently the subjects of decay" (164). This entropic model was also applied in clinical anatomy. The British physician and medical writer Nathaniel Edward Yorke-Davies suggested in 1893 that "the vital energy that is implanted in the body at birth is only meant to sustain it for a certain number of years. It may be husbanded or wasted, made to burn slowly or rapidly". This vital energy, he added, was "like the oil in a lamp" – a fixed quantity of fuel which could be "carefully husbanded and preserved" but would eventually expire (235).

The physiological implications of this process were emphasized in a series of lectures given in Boston in 1907 by the American scientist Charles Sedgwick Minot and subsequently serialized in *Popular Science Monthly*. Minot described senescence – "the becoming old" – in part, as "the loss of growth power" at a cellular level (IV: 359, 374).

He also configured ageing as a series of fundamental changes to the structure of the body, outlining a general "shrinkage and shrivelling" and "an atrophy of the parts, an actual loss of some of their bulk". This "physiological deterioration", he argued, led to "a lessened power in the muscles" and consequently, "a lessened control over the action of these muscles, an inferior coordination of the movements" (I: 484). Emaciated and infirm, the implied elderly subject in Minot's assessment lacked physical capacity for work of all kinds.

In accordance with the general medical model of corporeal entropy expressed by Stewart, Minot and others, commentators such as Kellogg focused on the reproductive organs as the seat of vitality, and constructed ageing specifically as a process of sexual decline. This paradigm emerged in the late nineteenth century, and its currency extended into the early decades of the twentieth century. Kellogg published *Plain Facts for Old and Young* in the 1870s, and the book's initial success was compounded by its enduring appeal: new editions were printed on both sides of the Atlantic until 1917. Writing almost fifty years later, the American psychologist G. Stanley Hall employed the same rhetoric of diminishing sexual energies in his book *Senescence*:

> Most important of all, and the chief source of human energy in man, are the sex glands, which distribute energy to all the sixty trillion cells of the body, making each carry out the function assigned to it…Sex glands stimulate not merely amorousness but all kinds of cerebral and muscular energy, pouring into the blood a species of vital fluid, and give a sense of vigor and well-being and plenitude of life, which later vanish when their source begins to run dry in age (309).

In Hall's formulation, the sex glands (which he interprets here after the identification of hormones in the early twentieth century) are not only the arbiters of the body's reproductive mechanisms: they also dictate its mental and physical functionality – the "oil in the lamp" which Yorke-Davies had earlier conceptualized in metaphorical terms.[3]

In their descriptive and prescriptive interests in human sexual function and practice, *Plain Facts for Old and Young* and *Senescence* represent two constitutive elements within a "web of discourses, special knowledges, analyses, and injunctions" on

[3] For more on the significance of Hall's text in relation to the field of gerontology, see Thomas R. Cole, "The Prophecy of Senescence: G. Stanley Hall and the Reconstruction of Old Age in America", *The Gerontologist*, vol. 24, August 1984, pp. 360-66.

sex, which, according to Foucault, operated across a range of institutions from the eighteenth century onwards. Institutional scrutiny of "the modes of sexual conduct" that Foucault locates at "the boundary line of the biological and the economic domains" was governed by a particular corporeal ideal (*History of Sexuality* I: 26). The body it envisaged was productive, purposeful and procreative. Yet, Foucault's theorization of the extent to which sex was discursively managed – "inserted into systems of utility, regulated for the greater good of all, made to function according to an optimum" (24) – does not engage with sexuality in old age. Moreover, as feminist critics have observed more recently, it also neglects to address the specificity of these disciplinary mechanisms in relation to gender, "treat(ing) the body throughout as if it were one, as if the bodily experiences of men and women bore the same relationships to the characteristic institutions of modern life" (Bartky 63). This double occlusion is attracting increasing critical attention, particularly in scholarship at the intersection of cultural history and Women's Studies. Boehm, Farkas and Zweirlein have observed that in Cultural Studies, "age has been a late addition to the study of difference and the assessment of the cumulative effect of age *and* gender has been even longer coming" ("Introduction" 6). Meanwhile, Pat Thane has noted the tendencies of both cultural history and social science to generalize representations of old age – "astoundingly often male, given the predominance of females among older people" (16) – and their failure to engage with the complexities of gendered discourse.

Building on this call for more nuanced contributions, I address discourses surrounding the expended energies of male and female bodies separately in this chapter, attending to the distinctive characteristics of discussions and representations surrounding each group in turn. In so doing, I illustrate the ways in which discussions of men's value in old age were often predicated on their capacity for physical work. In contrast, the rhetoric of functionality that was applied to women – who made up a significantly lower percentage of the workforce[4] – drew predominantly on their reproductive capacity, and its associated signifier: a youthful appearance.

[4] Drawing on U.S. Bureau of the Census data, W. Andrew Achenbaum notes that "the percentage of women over sixty-five employed outside of the home has fluctuated, but it never exceeded 10% this century, even though the proportion of gainfully employed women of all ages increased from 18.2% in 1890 to 22.7% in 1920 and 43.4% in 1970." See *Old Age in the New Land: The American Experience since 1790*, The Johns Hopkins UP, 1978, p. 95.

Spent men

> They want fresh blood and young muscle
> For their money-grinding mill
> It must always be worked at high-pressure
> To keep it from standing still.
>
> (Roberts 34)

These lines, written in the first person and published in a volume of poems by W. Hazlitt Roberts in London in 1896, voiced the lament of a former builder's labourer. A punctual and efficient worker for over twenty years, the man articulates his sorrow and desperation at having been discharged from work due to his advancing age. Facing a future of "slow starvation" ("Too Old" 37) and the prospect of the workhouse, and shamed by his inability to provide for his wife and family, the man sees suicide as his only option. In an accompanying note printed alongside the poem, Roberts described the work as a "rhymed version of a letter" recently addressed to a coroner by a 61 year-old man named James Watson, who had hanged himself in his London home (*Pathos* 38-48). The reasons for Watson's dismissal and demise, as Roberts interprets them, gesture towards significant social and economic changes to the status of the ageing male worker in the closing years of the twentieth century.

Aged men played prominent roles in British politics in the late nineteenth century. Benjamin Disraeli first entered office aged 64 and completed his second term aged 75, whilst William Gladstone – popularly referred to as "the grand old man" – served as prime minister four times between 1868 and 1894, resigning for the final time aged 84. The British Liberal Party politician Henry Campbell Bannerman took the office of prime minister in 1905, aged 69. In the early twentieth-century, an aged male elite continued to occupy prominent roles in public life.[5] However, this gerontocracy was not the natural preserve of the average male labourer. An accurate picture of employment and retirement rates among older workers throughout this period in both Britain and the United States has been the subject of critical debate amongst sociologists and historians of ageing.[6] Yet,

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[5] The actor Johnston Forbes-Robertson, for example, played Hamlet on stage and screen into his sixties. For more on Forbes-Robertson, see Judith Buchanan's chapter "Pedigree and performance codes in silent films of *Hamlet*" in *Shakespeare on Silent Film: An Excellent Dumb Discourse*, Cambridge UP, 2009, pp.147-89.

[6] Whilst John Macnicol has suggested that older people in Britain encountered greater difficulties in retaining and obtaining employment in the late nineteenth-century, Pat Thane has argued that there is little

no sustained critical attention has yet been paid to discussions and representations of the ageing male labourer in cultural forms, despite a wide body of materials which engage with this figure, including newspaper reports, periodical commentaries, and literary fiction.[7] Combining aspects of this social history with close analyses of cultural interpretations, however, reveals a sympathetic interest in the diminished status of older male workers and the displacement of these workers by the directives of modern productivism. Poets, authors and filmmakers used the conventions of their creative forms to offer humanist portrayals of ageing labourers cast aside not by the physical infirmity of old age, but by a welfare system which consistently devalued their contributions. Roberts' poem is a case-in-point: the writer identified the case of James Watson in the context of contemporary debate surrounding "the old age problem", offering this particular instance as part of a growing trend in which working men between the ages of 40 and 60 years were being laid off (*Pathos* 43). In the lines:

> Experience counts for nothing
> Fidelity gets no chance
> The tune is set by the engine
> And we have only to dance! ("Too Old" 35)

the skill and dependability of the older worker are supplanted by the compelling power of the industrial machine: physical autonomy is lost in the rhythmical locomotion of mechanized labour. In transposing Watson's original letter into poetry, Roberts reimagined a specific subjective experience of ageing and sought to engender a pathos that would succeed in "exciting a livelier interest in the treatment of poverty by the State" (*Pathos* 4).

The poet's concern for the "blunted and worn-out human tools" jettisoned by the ferocity of the "industrial whirl" (*Pathos* 48, 44) was a recurrent theme in social

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evidence to support the theory of a decline in opportunities for older workers. See: John Macnicol, *The Politics of Retirement in Britain, 1878-1948*, Cambridge UP, 1998, Thane, *Old Age in English History*, Oxford UP, 2000. Similarly, focusing on the American context, Achenbaum draws on census data for 1890 which listed 73.2% of males aged 65 or over as gainfully employed. See *Old Age*, p. 67. However, a 1922 study by the former director of the Pennsylvania Commission to Investigate Old Age Pensions drew on the censuses from 1900 and 1910 to demonstrate that the percentage of workers in industry and trades over the age of 40 was diminishing. See Abraham Epstein, *Facing Old Age: A Study of Old Age Dependency in the United States and Old Age Pensions*, Alfred A. Knopf Inc., 1922, pp. 9-10.

[7] The modest body of literary criticism that analyzes the figure of the ageing male in British writing typically does so as part of a broader overall study, and has focused largely on canonical writers such as Dickens and Trollope, and/or converged on the "middle-class" man. See, for example: Karen Chase, *The Victorians and Old Age*, Oxford UP, 2009 and Kay Heath, *Aging by the Book: The Emergence of Midlife in Victorian Britain*, State University of New York Press, 2009.

commentary. Writing from an employer's perspective for *The Manchester Guardian* in 1892, the British industrialist and politician William Mather identified "bodily powers" as a worker's "only capital", and observed that this was doubly diminished by the "course of nature" and by prevailing "customs" of employment which "exhaust it wastefully, leaving men prematurely broken and decrepit" (5).[8] An article by the American author Richard Washburn Child titled "What Shall We Do With the Old?" published in *Everybody's Magazine* in 1909 also framed the issue within the language of economy: "The old man cannot work any more. He is sixty-five years of age, powerless, tired. He is part of the worn-out equipment. Industry protects itself against the wear and tear of machinery by a depreciation fund, but this man – an industrial machine of flesh and blood – has not been protected against depreciation" (356-57). The market value of corporeal energy declined with use and time, added Child: "Industrial life is going faster. The cogs wear out quicker, and are thrown aside sooner, and the problem of the old was never so great as it is to-day" (361).

This sense that mechanized efficiency accelerated the exhaustion of the physiological mechanism was compounded by specific critiques of Taylorism. A piece titled "Old Age at Forty" published in *The American Magazine* in 1911 reported the findings of a study into working practices in the steel industry in Pittsburgh in the first decade of the twentieth century, highlighting an "unceasing and relentless" system of "speeding" orchestrated by competitive outputs "seldom equalled in any industry at any time" (Fitch 659). An investigation by the American Statistical Association reporting in 1915 levelled "the charge…against scientific management and the efficiency experts that they tend to speed-up workmen, deplete them, and displace them early", creating a class of workers who were "useless after forty years of age" (Todd, 565, 559). It also noted that a considerable proportion of the US tramp population consisted of males over the age of fifty (554). Increased industrial efficiency was "using up human energy at a greater speed and in a briefer period of life", observed Abraham Epstein in his study of old age dependency in the United States published in 1922 (3). In W. Hazlitt Roberts' poem, the devaluation of the ageing worker is configured quite literally, as the old man's body – "steady and slow" – fails to compete in a market increasingly galvanized by junior workers with a greater capacity for "all such push and bustle/ Such hurry-scurry and drive" ("Too Old" 36, 35). Dynamic and unrelenting, the "money-grinding mill" operates on "fresh blood and young muscle" which presents itself "unsought/ Beating the door

[8] Quoted in A.J. McIvor, "Employers", pp. 724-732 (p. 726).

with eager stroke/ Calling aloud to be bought" (34, 35). Roberts laments the new social value conferred upon the physical vigour of the young, able-bodied male ("Forever the young come crowding / Hustling the old away" 35), and suggests the profound injustice and human cost of this prioritization.

Writing thirteen years later, Jack London framed the intergenerational competition engendered by the new economic order as an antagonistic encounter for which the older man is physically – and so economically – ill-equipped. The protagonist of his 1909 short story "A Piece of Steak" is a poor, ageing professional boxer named Tom King, who finds himself pitched against a new and younger opponent. One of a number of fictions featuring boxing published by London, who was himself an amateur fighter, the story has received little critical attention in comparison to his more-oft discussed novels.[9] This is despite the fact that London first published the work in *The Saturday Evening Post*; a "pulp" magazine whose readership occupied the boundary between a working-class and middle-class readership and which by 1908 had a weekly circulation of more than a million copies (Mott 4: 692). The story also met with interest in Britain, where it appeared in the illustrated monthly *The Windsor Magazine* in 1911 and as part of a short-story collection published by Mills and Boon in 1912 (McAleer 78).[10] Furthermore, its resonance with a widespread audience was such that the Hollywood screenwriter Wallace C. Clifton, whose credits included films for the Lubin Manufacturing Company and Selig, adapted the story for the screen (though the film was never made).[11] Although set in Australia, London's story was published in the US within the context of declining labour force participation rates for the old. Between 1890 and 1900, the percentage of men aged 65 or over in employment dropped from 73.8% to 68.4%, and down again to an estimated 63% by 1910 (Epstein 10). "Times are hard", Tom King ruminates, and "even the most irregular work was difficult to find" (6). At the

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[9] The only critical discussion of the story I have been able to trace is in Susan Irvin Gatti's "Jack London and Boxing: The Manly Art of Making It", *Jack London Newsletter*, vol. 21, no. 1-3, 1988, pp. 77-85. The copy of this newsletter held by the British Library is missing.

[10] *The Windsor Magazine* vol. 33, February 1911, pp. 345-56; *When God Laughs, And Other Stories*, Mills and Boon, 1912.

[11] See "Wallace C. Clifton: Filmography" (explore.bfi.org.uk). London successfully sued the Balboa Amusement Producing Company for breach of copyright and the right of dramatization for the story and the film was never made. A brief for the lawsuit brought by London and a copy of the film scenario Clifton adapted from London's story is held in the Manuscripts division of the Huntington Library, CA. See Wallace C. Clifton, "A Piece of Steak: film scenario adapted from the story by Jack London. c.1909-1913". TS., and "Brief for the lawsuit brought by Jack London against The Balboa Amusement Producing Company for infringement of copyright and the right of dramatization for London's A Piece of Steak", 1913. TS. Donald Barker Papers 1902-1922, Huntington Library, CA.

same time, masculinity was understood increasingly in relation to labour-power: "defined, tried and tested in the marketplace" (Kimmel 8). A new value was placed upon men with physical strength and applied energy. With this combination of factors, a growing proportion of elderly men faced diminished status within the workplace and within their own households.

Jack London offers one such example in Tom King. Boxing is King's livelihood: "He was a professional…Fighting was a business with him" (6). In addition, the sport is also likely to have carried a particular metaphorical weight for a contemporary readership. Elliot Gorn has argued that "symbolically, the ring was a surrogate workplace", and observed that contemporary newspaper reports about boxing often framed their accounts in the language of professional work: a combatant "went to work" on his opponent, or "did good work" in the ring (137). In this sense, "A Piece of Steak" suggests the extent to which social experience, as Steve Sturdy argues, was "bound up with the bodily experiences associated with industrial work – experiences of physical labor, the exercise of manual skill and dexterity, bodily fatigue and work-related injury and illness" (217). King's breadwinning capacity is contingent upon his boxing success, and in the opening lines to the story, he finishes his last morsel of bread as his wife observes him with "solicitous eyes", having sent his children to bed without supper. The physical description of King invokes the diminution of his former glory: he is a "solid-bodied, solid-looking man", but his body is retarded by sustained toil and insufficient nourishment, his movements "slow, almost hulking, as though he were burdened by the heavy weight of his muscles" (6). A description of the veins on the back of his hand configures his circulatory system – the source of life-blood and energy – as a fatigued generator. Warped through age and use, they are "large and swollen…His heart had pumped too much blood through them at top pressure. They no longer did work. He had stretched the elasticity out of them, and with their distention had passed his endurance" (6). Yet London does not offer a straightforward narrative of ageing-as-decline. Instead, he places the reduced physical capacity of old age and a socio-economic system which eulogizes youthful vigour in an unresolved nexus of cause and effect. King finds himself caught in a double-bind: his failure to feed himself and his family is both the result of his ailing strength, and the cause of it. Ahead of an organized fight, he seeks a piece of steak on credit but the butcher, mindful of King's age and not confident in his chances against a younger opponent, refuses to provide it. Penniless, undernourished and unfit – "when a man is forty it is harder to get into condition than when he is twenty" – King further exhausts himself in a two-mile walk to the venue (6).

In contrast, King's opponent, Sandel, is "youth incarnate, deep-chested, heavy-thewed, with muscles that slipped and slid like live things under the white satin skin", and is one of a number of "aspiring young heavyweights" whose challenges are presented to the audience before the fight begins (7). In context, this articulation of youthful good health verges on the offensive, acting as it does as an implicit indictment of King's decrepitude. This parade of greenness prompts King to reflect on the inexorable trajectory of the life-cycle and the displacement of age by youth: "and ever they came, more and more youngsters – Youth unquenchable and irresistible – and ever they put the old uns away, themselves becoming old uns and travelling the same downward path" (7). King and Sandel's competitive encounter is also a figurative confrontation between youthful and ageing masculinities – an antagonism that, London suggests, will ultimately benefit neither: "Yes, Youth was the Nemesis. It destroyed the old uns and recked not that, in so doing, it destroyed itself".

King's awareness of the physical advantage and social value of youthfulness permeates the story, but the fight itself is no mere show of the superior strength of juvenescence. The descriptive choreography of this intergenerational combat pits the fervour of youth against the "strategy of age" (8). Sandel operates through machine-like motions, "like a mechanism of steel and springs balanced on a hair trigger" (7). "Tireless" and "unaware of limitations", with "superb" strength and endurance (8), he is "a living wonder of white flesh and stinging muscle that wove itself into a dazzling fabric of attack" (7). The narrative voice here is audibly caught between admiration and suspicion of this stunning display of physical prowess. King meanwhile, operates "a policy of economy", moving "stolidly about, never leaping or springing or wasting an ounce of strength" (7). The two men's bodies represent rival energy systems at work: one "prodigal" in its physical application, the other "parsimonious" (8). That unrestrained vigour will win out over cautious skill is by no means a foregone conclusion; by the third round, King's "careful shepherding of strength" begins to pay off against the urgency of an adversary who "had not yet learned to rest" (8). "Discreet age" outperforms "the froth of youth" (7). As they enter the tenth round, however, King's conservative energetics founder and finally fail, and his thoughts return at intervals to the unobtainable calorific energy of that piece of steak, as the crucial factor in his defeat.[12]

[12] For more on the nineteenth century "science of nutrition", which included the discoveries of both "calories" and "metabolism", see the Afterword to this thesis, pp. 204.

The boxing ring is Tom King's workplace, and the outcome of the fight underscores the extent to which an aggressive economic system predicated on maximized corporeal energies disadvantages the older worker and favours the youthful one. The cycle of youth and age corresponds directly with capitalism's appropriation and disregard of working bodies as elaborated by Marx: "the labour-power withdrawn from the market by wear and tear and death, must be continually replaced by, at the very least, an equal amount of fresh labour-power" (168). London maps this prevailing ideological circuitry onto the physiology of King's body. If, within this system, energy constitutes physical capital, the comestible source of that energy (a piece of steak) is obtainable only through possession of that other capital: financial assets. According to Marx, "the minimum limit of the value of labour-power is determined by the value of the commodities, without the daily supply of which the labourer cannot renew his vital energy" (169). The King-Sandel fight – a pre-industrial head-to-head of male strengths – underscores the centrality to the new industrial order of the optimally functional human body.

Trapped within this economic system, King, as an older male worker, finds himself under-resourced (through poverty) and over-stretched (through a lifetime of physical work). Yet, if he is, himself, in one sense, the "piece of steak" of the story's title – tough, muscular and mature, but ultimately commodifiable and expendable – London's tale invites its readership to identify with a protagonist whose "fighting intelligence" is finally defeated by the material inevitability of "absolute weakness" (43). It also asserts the value of the artisan worker in the industrial order. King earns his living "not like a modern working man going to his machine grind, but in the old, primitive, royal, animal way, by fighting for it" (6). The sociologist Michael S. Kimmel reads boxing's growing popularity in the early twentieth century in correlation with the acceleration of the industrial juggernaut. This particular sport, he suggests, "was more than mere manhood; it heralded the triumphant return of the Heroic Artisan as Mythic hero", in direct opposition to the industrialization of the working body in "enormous, impersonal factories" (56). Two years after London published of "A Piece of Steak", Frederick W. Taylor would cite the wilful energies of workers playing sport as evidence of "slow working", lamenting that English and American men "strain every nerve" to "secure victory" in recreational contexts, only to turn up to work the next day and physically underperform (*Principles* 13). Tom King's old fighting body, autonomously directed and skilfully coordinated, represents a powerful counterpoint to the regulated uniformity of the younger twentieth-century factory worker. "A Piece of Steak" acknowledges old age as a period of physical deterioration. But it also foregrounds the dignity and achievements

of a life long-lived and invites its readers to consider the socio-economic conditions which so coolly disregard such lives.

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The social commentaries and literary examples explored above decode the ableist logic of modern productivism as it applied to the ageing male body in the context of physical labour, suggesting that the marginalization of older men in the workforce was as much the result of socio-economic factors as physiological ones. Yet, the dominant model of old age as a state of economic redundancy was powerfully reinforced by a medical narrative which insisted that the senescent man was *sexually* spent. Both discourses were predicated on a metaphorical understanding of the male body's seminal economy. Margaret Morganroth Gullette has identified a belief in the operation of semen as vital fluid expressed in similar terms in late nineteenth-century popular medical literature for men.[13] However, Gullette is equivocal about the extent to which the authors of these materials correlated ageing with sexual decline, even going so far as to conclude that "a man of forty-five who matched the prescriptive models had fewer ideological causes to impose a severe bodily critique on himself than he would have had at any time since" (87). In one sense, this critical ambiguity is drawn from the tone and nuance of the texts themselves. In his chapter on old men in *Plain Facts for Old and Young*, for example, Kellogg allowed for continued sexual function but at heightened risk, in his observation that "the generative power of the male is retained longer than that of the female, and by stimulation may be indulged at quite an advanced age, but only at the expense of shortening life, and running the risk of sudden death" (115). Elsewhere, he was more categorical, advising that the "proper limit of man's functional activity" was 50 years old, and warning that the continued manifestation of sexual energy into old age could indicate a pathology: "When the passions have been indulged, and their diminishing vigor stimulated, a horrid disease, satyriasis, not infrequently drives upon the imprudent individual, and drives him to the perpetration of the most loathsome crimes and excesses"

[13] Drawing on G.J. Barker-Benfield's book *The Horrors of the Half-Known Life: Male Attitudes Towards Women and Sexuality in Nineteenth-Century America* (Harper and Row, 1976), Gullette refers to this as a theory of "spermatic economy" in "Male Midlife Sexuality in a Gerontocratic Economy: The Privileged State of the Long Midlife in Nineteenth-Century Age-Ideology", *Journal of the History of Sexuality*, vol. 5, no. 1, July 1994, pp. 58-89 (p. 68). Angus McLaren uses the same term in his book *Impotence: A Cultural History* (University of Chicago Press, 2008) but engages with ageing only marginally.

(116). Injudicious management of the body's "vital expenditure", he advised, would invite both physical and moral degeneration (384).

Other popular health manuals published in the late nineteenth century which dealt with the topic of male sexual function in old age similarly pronounced the old man's infirmity and lack of fecundity. The New York physician Augustus Kinsley Gardner described the "diminution of the procreating power" which took place over a twenty-year period from the age of fifty onwards (152). He outlined the dangers of sexual relations throughout this time, reasoning that "the reabsorption of the fecundating liquid impresses upon the entire economy an entirely new energy and a virility that contributes to the prolongation of life" (163). In Gardner's formulation, semen was a material source of the body's vital energy, and its loss through sexual activity would only compound the general deterioration of old age.[14] Similarly, the London surgeon William Acton corroborated "a generally received impression that semen, after having been secreted, can be reabsorbed into the circulation, giving buoyancy to the feelings, and the manly vigour which characterises the male" (126). In designating the "generative function" directly as "the test of manhood", whilst at the same time insisting that this "must diminish with a waning frame" (248), Acton contributed to the broader discursive desexualization and demasculinization of ageing male sexuality in popular medical literature. Older men who demonstrated the "excess" of their sexual energy through their actions were generally deemed to display – or risk courting – symptoms of clinical disease.[15]

Taken together, popular scientific discussions of the ageing man's waning virility, and the productivist narrative of his declining capacity for work, had profound implications for the construction of masculinity in later life. They both reflected and amplified contemporary anxieties about a growing demographic of "spent men" whose social, economic and sexual power had been expended.

Faded women

The prevailing gender ideology of the late-nineteenth and early twentieth-centuries defined a different occupational landscape for women to the one it carved out for men.

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[14] "Behind Victorian sexual prescriptions to boys and men lay a history of theories connecting virility and longevity." See Gullette, "Male Midlife Sexuality", p. 61.

[15] See, for example, Kellogg's suggestion that "sexual excesses" caused physical ailments, including bladder and prostate disorders, in *Plain Facts for Old and Young*, I.F. Segner, 1887, p. 383.

The last decades of the nineteenth century and the early decades of the twentieth century saw the expansion of women's employment in a wide range of trades and occupations in Britain (Holloway). This was mirrored in the US, where women made up to a quarter of the workforce by the end of the nineteenth century.[16] Nonetheless, as Folbre and Abel note, "Both the middle-class 'cult of domesticity' and the working-class concept of the 'family wage' dictated that a wife's proper place was in the home" (551). At the same time, the late nineteenth century marked the beginning of a period in which "doctors laid claim to the female reproductive body, extending their capacity to manage and manipulate it" (Pfeffer 277). This patriarchal paradigm evaluated a woman's worth predominantly in relation to her (unpaid) domestic labour, oriented by the "business" of marriage and child-bearing. According to this logic, it stood to reason that the loss of female reproductive power through age marked the limitations of her social usefulness.

The same gender ideology also informed the growth of medical interest in the menopause. Variously referred to as the "climacteric", "cessation" or "change of life" in popular medical advice literature published on both sides of the Atlantic, menopause was a category which encompassed a wide range of symptoms and disorders in older female patients. Interpreting menopause as a biological measure of female old age, these discourses – composed and circulated almost entirely by men – "limited and oppressed non- and post- reproductive women", by defining their bodies primarily in terms of deficiency (Heath 113). John Harvey Kellogg described menopause – the end of a woman's "period of fertility" which typically occurred around the age of 45 – as a series of regressive internal changes: "The ovaries, womb, and vagina undergo a process of atrophy, or shrinkage, by which they become reduced to a smaller size than before development occurred" (88, 453). In *The Change of Life in Health and Disease*, first published in 1857 and widely reprinted across Britain and the United States into the 1880s, Edward John Tilt framed the menopause as "the failure of ovarian energy", arguing that "ovarian stimulus" energized the body from puberty onwards by augmenting

[16] Claudia Goldin is one of a number of critics who have argued that historical data sets such as censuses consistently underestimated the number of women in employment. According to official figures, the labour force participation rate in 1890 for all women aged between 15 and 64 years is 19 %. Goldin suggests that a more accurate figure would be somewhere between 24.6 and 25.7%. See "The Female Labor Force and American Economic Growth, 1890-1980", *Long-Term Factors in American Economic Growth*, edited by Stanley L. Engerman and Robert E. Gallman, University of Chicago Press, 1986, pp. 557-94 (pp. 560, 577). For an overview of other revisionist scholarship in this area, see Nancy Folbre and Marjorie Abel, "Women's Work and Women's Households: Gender Bias in the U.S. Census", *Social Research*, vol. 56, no. 3, Autumn 1989, pp. 454-70 (p. 546, note 1).

nerve force, facilitating nutritive functions and imparting overall strength. With the onset of years however, came "ovarian involution" or "ovarian atrophy" (1, 15, 13).

This advice literature on female menopause generated the same narrative of desexualization as the one applied to the "male climacteric". The dangers of "senile sensuality" applied to both sexes (Kellogg 115), and the retention or increase of a woman's sexual appetite during this period was regarded as "abnormal" – a word which invoked the charge of aberrant, as well as unusual, activity (Webster 46). Yet, analyses of women's declining reproductive power were conducted with a particular scrutiny of physical appearance that was largely absent from descriptions focused on men. "The form of the body alters and becomes less graceful, either from great diminution or excessive increase of fat", warned Webster; "sometimes the body becomes more masculine in appearance, the skin becoming coarser and hairs growing on the chin" (39-40). Tilt also insisted on the erosion of a woman's outward aspect, stating that "there is generally something in the appearance which leads to a suspicion of what is taking place". Amongst these degenerative alterations, he listed "knitting of brows"; "an unusual development of hair on the chin and upper lip" and a "pale or sallow" complexion, adding that "there may be a drowsy look, or the dull, stupid astonishment of one seeking to rouse herself to answer a question" (35).

Alongside fading looks, women might expect changes relating to their "character and disposition", including irritability, "outbursts of temper" or even "complete loss of self-control" (Webster 40, 43). In the estimation of these writers, such visible physiological and behavioural changes heralded the degradation of a woman's biological function and correspondingly, of her social role. Augustus K. Gardner, the New York physician who had recommended the conservation of seminal fluids in men to retain the body's vital power, had no such equivalent prescription for women, whose fate, he argued, was already sealed: "The body itself does not long delay entering into decrepitude", he reflected, "and soon we see the woman – once so favoured by nature when she was charged with the duty of reproducing her species – degraded to the level of a being who has no further duty to perform in the world" (150).

The pervasive degradation of ageing female sexuality in popular medical literature also extended across the sphere of cultural production. In recent years, literary critics have begun to draw attention to the largely negative representations of older women's sexuality in fiction from the late nineteenth and early twentieth centuries (Heath; Niles; Small). However, the particular contributions of early cinema to this topic

have so far been largely overlooked. Yet film, as a visual medium, was drawn to ageing as a corporeal state with clear visual signifiers. As such, it bears the discursive traces of scrutiny surrounding observable physiological changes in ageing women. Cultural historian Maud Ullman has identified early popular visual culture as an influential, yet understudied area in the emergence of modern sexuality in America at this time:

> Films portrayed specific images that helped create new social codes. By offering certain sexual stereotypes that fit both the new medium and the concerns of the audience, film contributed significantly to the renegotiation of public sexuality. Its impact fundamentally altered how sexuality was understood and articulated (8).

Paying critical attention to the stylistic and performance conventions of early films can thus fruitfully expand understanding of the social and cultural status of ageing female sexuality. A sub-genre of early film shorts released in the closing years of the nineteenth century which featured the figure of the "old maid" represent a particular case study in this regard. The phrase "old maid" had been used since the sixteenth century as a predominantly derogatory term to describe a category of women who remain unmarried and childless into later life.[17] In an article titled "What to Do With Our Old Maids?" published in 1862, the Irish writer and feminist Frances Power Cobbe estimated that one in four British women did not marry, and that this proportion was increasing (594). Cobbe also drew attention to the prevailing double-standard which heaped scorn upon old maids, but took "little or no notice…of old bachelors" – of whom, she suggested, there were an almost equal number (598). A sexual health manual published in Canada and the US in multiple editions throughout the 1890s outlined the salient features of the old maid stereotype at the turn of the century:

> Old Maids are mentioned on every hand with mingled pity and disdain, arising no doubt from the belief, conscious or unconscious, that they would not be what they are if they could help it. Few persons have a good word for them as a class. We are constantly hearing of lovely maidens, charming wives, buxom widows, but almost never of attractive old maids (Jefferis and Nichols 141).

The persistence of this characterization into the early twentieth century, and its basis in intergenerational comparison, are evident from a 1914 Philadelphia newspaper article

[17] "old maid, n.", *OED Online*, Oxford UP, March 2016.

titled "Batchelor Girl vs. Old Maid". The old maid – "narrow and stern, keenly opposed to the natural, innocent pleasures of youth, and somewhat prim and forbidding in her ways" it stated, "has always been an object of ridicule". The literary critic Nina Auerbach has explored representations of old maids in late-Victorian literature and culture, demonstrating their dual status as pathetic figures – "a plaintive variant of the angel of the house" – and as a social threat (111). Auberbach notes that the "vision of a new race of old maids assuming power over the future seeps into some of our most beloved and familiar works of Victorian fiction", and her analyses cover writings from well-known authors including Charlotte Brontë, Elizabeth Gaskell and Charles Dickens (114).

Stabilized as a known given in both her appearance and behaviour, the old maid was also a recurring feature in American vaudeville and the British music-hall.[18] Early cinema emerged in part from this culture of popular entertainment, and inherited what Joe Kember has referred to as a tradition of "comic typage". Kember notes that "early filmmakers had a wide range of such well-known personae to choose from", adding that "the audience's existing stock of knowledge about these figures meant they could be flexibly inserted into old and new narratives" (*Marketing* 157). Through this fluid intertextual exchange, stock characters such as the old maid – much like that of the tramp, explored in the first chapter of this thesis – elicited "highly conventional relationships with audiences" which could "playfully reinforce social constructions of gender, race, age and class identity" (156-57). The old maid was a recurring screen presence in cinema's first two decades.[19] Ullman points to the old maid stereotype in early cinema as part of the broader renegotiation of the boundaries of acceptable female roles within public discourse and popular culture around the turn of the twentieth century (20-23). My own close readings of a number of these films, some of which survive in the archives of the Library of Congress, Washington D.C., and the National Film Archive, London, emphasize the contributions of their derisive comedic representations to a pervasive cultural attitude which denigrated ageing womanhood.

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[18] The English writer and caricaturist Max Beerbohm identified the "old maid" in his recollections of music hall themes. See David Cecil, *Max: A Biography*, Constable and Co. Ltd., 1964, p.181.

[19] There are eight films held in the Paper Print Collection at the Library of Congress with "Old Maid" in the title. See Kemp R. Niver, *Early Motion Pictures: The Paper Print Collection in the Library of Congress*, Library of Congress, 1985. A keyword search for "old maid" in the collections database at the National Film Archive, London, reveals eleven titles. See collections-search.bfi.org.uk/.

A number of these short films featured the body of the older woman as the site of redundant sexual energy, inviting audiences to revel in the disjunction between the old maid's desire and the asexuality socially ascribed to her. The plot of *The Old Maid and the Burglar*, released by the American Mutoscope Company in 1898, drew upon the popular folk song of the same name composed the previous year. In the song, "surprised by an old maid, a burglar slips under the bed and watches her remove her glass eye, wig, wooden leg, and so on. She hauls him out and threatens to shoot him if he doesn't marry her; he begs her to shoot".[20] The song's would-be male voyeur becomes unwilling witness to a parodic striptease as the old woman attempts to divest herself of the prosthetic indices of old age and disability. In the film, the woman's desperation is underscored by her indecorous fervour: "she promptly falls on his neck and gives him an effusive welcome, much to his surprise and disgust" (*AMB Picture Catalog* 17). Such was the resonance and popularity of this premise that two other film companies subsequently released films of the same name, in 1903, and 1910.[21] Elsewhere, *The Old Maid's Valentine* (1901), directed by the British filmmaker George Albert Smith, mocked aged female sexuality through cross-dressing. Sporting a wig, dress, lace shawl and rimless spectacles, the music hall performer Tom Green inscribed the character of the old maid with a literal masculinity. This perverse femininity is symbolically and emphatically rejected: Green's maid excitedly receives a Valentine's Day card, only to discover that it contains a mocking fold-out caricature of her likeness.[22]

Early cinema's visual interest in the external signifiers of female sexual decline is further exemplified in two "old maid" films held in the archives of the Library of Congress which dramatized this curiosity self-reflexively. The scene in *The Old Maid's Picture* (American Mutoscope Company, 1898)[23] is a photographer's studio, and a plate camera on a tripod is placed in the foreground. The old maid takes a seat in front of it,

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[20] Written by E.S. Thilp, the song was originally titled "Burglar Man". Norm Cohen, *Folk Music: A Regional Exploration*, Greenwood Publishing Group, 2005, p.296.

[21] "Burglar and Old Maid", Lubin, 1903. "The Old Maid and the Burglar", Essanay Manufacturing Company, 1910.

[22] Paul Matthew St. Pierre cites this as the earliest film to feature a music hall performer in a cross-gender impersonation. See *Music Hall Mimesis in British Film, 1895-1960: On the Halls, On the Screen*, Associated UP, 2009, p. 109.

[23] Released in 1898, the film was copyrighted in 1903 and is therefore listed in Kemp R. Niver's finding guide under the later date (Library of Congress, 1985, p. 228). I am grateful to Zoran Sinobad, Reference Specialist at the Library of Congress Motion Picture Reading Room, for his assistance in establishing the details of this title.

and the photographer enters, arranges the shot, adjusts the camera and squeezes the bulb attached to the shutter. In the words of the film company's catalogue description, the camera "is not equal to the task" of reproducing the old woman's likeness: it explodes, and her dignity is further eroded as she is blown backwards from her chair (*AMB Picture Catalog* 14, see fig. 4.1).

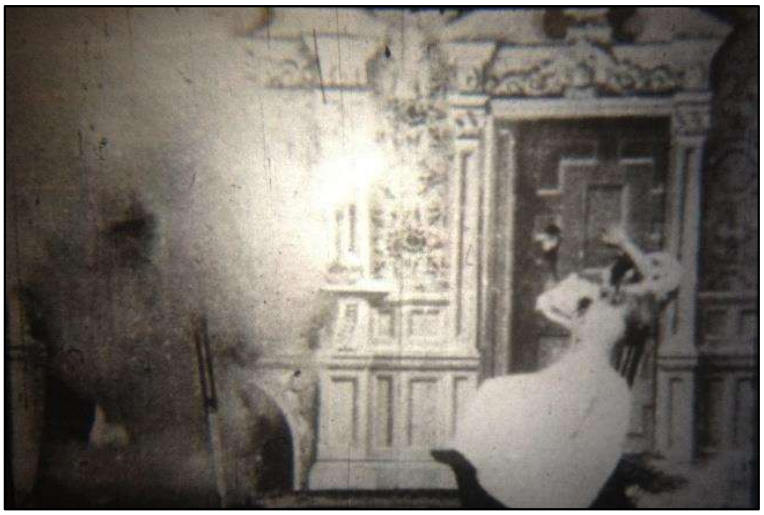

Fig 4.1 Still from *The Old Maid's Picture*, American Mutoscope Company, 1898.

The Old Maid Having Her Picture Taken, released by Edison in 1901, staged a similar scenario, recruiting the well-known vaudeville performer Gilbert Saroni, who specialized in impersonating old maids on stage, to incarnate the character on screen.[24] Edison's version strengthened the implication in the earlier film that the camera's destruction is the result of the old maid's putative ugliness. As the male photographer sets up his equipment, the woman gazes at a number of mounted photographs, only for the picture frame to fall from the wall. When she turns her visual attention to a clock – that unrelenting symbol of the inexorable passage of time – it does the same. The point is clearly determined when she preens herself in front of a mirror which then cracks. Finally, ready for her close-up, she faces the camera, only for it to promptly explode (fig. 4.2).

[24] See Charles Musser, *Before the Nickelodeon: Edwin S. Porter and the Edison Manufacturing Company*, University of California Press, 1991, p.169.

Fig 4.2 Still from *The Old Maid Having Her Picture Taken*, Edison Manufacturing Company, 1901.

The malfunctioning camera in both films operates as the "crazy machine" which Tom Gunning has identified as a staple of early cinema comedy (see pp.96-97 of this thesis). But more than this, it misogynistically suggests the calamitous *unsightliness* of female old age. The old maid is simultaneously compulsive visual subject matter and a challenge to the conventions of visual reproduction. As in *The Old Maid's Valentine*, the use of male actors to impersonate the old maid underscores the character's desexualization, drawing additional attention to the conspicuous absence of female secondary characteristics. More than just symbolizing "sexuality unused and thus outside of communal control and direction" (Ullman 23), these "old maid" films construed aged female sexuality as a state of living decay, an image of wasted sexual potential so repellent that it both required and apparently defied visualization.

Reproductive degeneration and the cult of youth

The dominant gender ideology of the late nineteenth and early twentieth centuries as it extended across the medical and cultural materials sampled in this chapter configured male and female ageing as a distinct series of physiological changes. Underscored by a conceptual understanding of the body as the seat of limited vital energy, the new discourse of senescence created categories of "spent" men and "faded" women, unable to meet the physical demands of work and/or reproduction. These ideological investments in male labour-power and female fertility also embedded the trajectory of the life-course within a broader bio-social narrative of racial degeneration. The authors of the popular medical advice literature explored in this chapter warned that aged men and women might

generate infirm offspring. Kellogg argued that "In old age, the seminal fluid becomes greatly deteriorated. Even at its best, its component elements could only represent decrepitude and infirmity, degeneration and senility" (388), while Acton warned that aged fathers, whose energies were in decline, would not be able to transmit the required "rich stock of force and vitality" (252).

The perception of women's diminishing reproductive power generated particular cause for concern in social commentary. Kellogg reported that in "exceptional cases" where female fertility endured beyond the age of 60, "the progeny is feeble and senile" (88). This unease extended beyond discussions of old age alone to address a range of issues connected to women's shifting status in society. Those women whose bodily energies were not invested primarily in procreation were believed to be jeopardizing the future of the race. A 1911 article in *The New York Times* written by Max Schlapp, Professor of Neuropathology at Cornell University Medical College, framed "Activity of Modern Woman A Racial Problem". Schlapp drew on the emerging science of endocrinology to suggest that women were failing to manage their individual energy economies successfully, and that this had profoundly negative consequences for the future of civilization. In his estimation, women's increased participation in the workforce represented a grievous misapplication of their limited potential. "Women are giving energies never before assigned to industry in disregard of a natural law that makes it imperative for them to conserve their energies for the times in their lives they need them most", Schlapp wrote, with reference to the "special tax" on the energy of the body demanded by childbirth. Schlapp shared in a prevailing understanding of hormones as the "chemical equivalent of life force" (Schuster, *Neurasthenic* 143), arguing that such women risked passing on fewer hormones to their offspring, with potentially disastrous effects on racial stock. That same year, Theodore Roosevelt decried the "willful [*sic*] sterility" of married men and women as a "cardinal sin, against the race and against civilization" ("Race Decadence" 763). Widespread concern about racial degeneration conferred a new value on reproduction as a moral duty to be undertaken early in life, when sexual energy was in abundance.

In demeaning old age, the energetic model of human physiology, and its metaphorical elaboration in a wide range of written and visual materials from the US in particular, correspondingly elevated the condition of youth. "America is a young country, and in love with youth", observed the writer of a 1905 article in the popular weekly American magazine *Living Age* (Lang 381). "How shall I describe Youth?" wrote the

critic and essayist Randolph S. Bourne in his 1913 book *Youth and Life*: "One thing, at least, it clearly is: a great, rich rush and flood of energy" (3). Together, the pathologization of old age, and a new emphasis on youthful exuberance, transformed perspectives on the life course. Widespread interpretations of ageing as the inevitable dissipation of the body's productive and reproductive energies would generate new medical, commercial and cultural interest in the possibilities for regenerating the human form.

As geriatric medicine "tended to divide the life cycle into distinct and irreversible stages" (Haber 5), other specialist areas of science began to turn their attention to the ways in which this teleology of inevitable decline might be not just arrested, but *reversed*. Mystical expressions of the desirability of immortality, such as the "fountain of youth" and the "elixir of life", were joined in the early twentieth century by the pragmatic optimism of bodily regeneration through experimental biomedical techniques, including blood transfusions, surgical transplants and hormonal therapies. For some, such practices raised prospects of the restoration of youthful function and appearance. An array of medical science fictions in film and literature formulated their own visions of bodily renewal and rejuvenation, inflected by the gender ideologies examined in this chapter. These fictional materials combined technical detail with fantasies of corporeal transcendence. Their imaginative visualizations of ageing bodies defying natural and temporal laws, reflected – and often promoted – the renewed desirability of youth for a mass audience of readers, cinema-goers and consumers. It is to these that I turn my attention in Chapters Five and Six.

Chapter Five

Rejuvenated Male Energies

The issue of the American literary journal *The Argonaut* published on February 19th, 1887 carried the usual content its readers had come to expect in the publication's near twenty-year history. Editorials on leading religious, political and social issues appeared alongside reviews of current theatre productions, "society" news and "literary notes" on new books and magazine features. Also embedded within this particular weekly edition was the new speculative fiction "The Man Who Grew Young Again" by the Scottish-born San Francisco-based writer Robert Duncan Milne, who had been a prolific contributor of science fiction content to the journal since 1879.[1] Set in San Francisco itself, this particular story advertised its interest in "the startling results brought about by the transfusion of blood" in its eye-catching sub-title.

The story centred on the recollections of an unnamed experimental physician and surgeon concerning a middle-aged English gentleman named Wycherley. On a rural shooting expedition, Wycherley sustains a gunshot wound to his leg after accidentally discharging his weapon. The resulting blood loss poses a potentially fatal threat to the man's economy of vital energy, a serious "drain upon the life-fountains of his system" (4). The physician notes that this depletion is compounded by the man's age, "for when a man gets to be five and forty, as I knew Wycherley to be, no matter how robust his constitution, he does not possess the recuperative powers of a man fifteen years his junior" (4). The blood transfusion that the doctor decides to perform on his patient represents a fusion of realism and fantasy, in which contemporary medical and cultural understandings of blood, and of ageing masculinity, coalesce. The doctor seeks to secure "the youngest and richest human blood procurable" to replace Wycherley's lost fluid: "vigorous specimens of manhood" of the outdoorsy, country type, who will supply "the stream of their lives to supplement and replenish" the weakened older man (4). With the help of the community, the doctor selects Fritz and Wilhelm, two young local brothers he describes

[1] Despite the popularity of Milne's fiction across the west coast of America throughout the 1880s, Milne's life and work have received very little critical attention. Sam Moskowitz provides a short biography of Milne in his edited collection of the writer's work *Into the Sun and Other Stories: Science Fiction in Old San Francisco*, Vol. 2, Donald M. Grant Publishers, 1980, pp. 10-13. I am grateful to Barry Sullivan for providing me with photocopies of the relevant pages from this out of print title.

as "Fine, strong, clear-skinned, strapping lads of some twenty summers…evidently of Teutonic origin", estimating that they possess "a practically unlimited store" of "pure life-fluid". These "German youths" are "persons of a plethoric habit and redundancy of blood": their abundance of vitality is located in their sanguine condition in both the metaphorical sense – as specimens of good racial stock – and in material terms, as vessels of a bountiful bodily humor (4). Drawing on each brother in turn, the doctor inserts a makeshift apparatus of syringe and plastic tubing into an incision made in the donor's arm and connects the other end to Wycherley's vein.

Over the course of subsequent treatments administered across a number of days, the patient begins to show signs of improvement. However, when the ligature bursts and the wound reopens, the doctor improvises an experimental emergency transfusion, using blood vessels harvested from a recently-slaughtered calf in place of rubber tubing, to prevent coagulation. Employing the services of both donors simultaneously, he positions the young men at either side of his patient and bridges the dying man's veins with each of theirs, fashioning a hybrid organism that is part old man, part-animal, and part-youth. "A complete and perfect connection had now been formed with the circulatory organs of the men", he recalls, so that "they formed, in fact, one circulatory system" (5). Insisting that the men remain thus bound for an extended period, the doctor removes the bandages some days later to find that their bodies have begun to fuse together through the growth of connective tissue: "not only had the veins grown together at severed points", he states, "the edges of the skin around the incisions through which the veins protruded had also met and adhered with a healthy granulation" (5). Corresponding with this corporeal synthesis, the narrator also observes elements of non-localized transformations in each subject which affect physical appearance and constitutional temperament:

> Was it fancy, I asked myself, or was it fact that Wycherley was becoming structurally and organically affected by the new blood which was now circulating through his system? Could the mere transfusion of ordinary blood into his veins have given the freshness of look, the elasticity and buoyancy of spirits which were not his, to a man who, scarcely two weeks before, had been upon the bed of death? (5).

United within this "curious physical trinity", the two youths begin to show signs of senescence as the older man displays those of juvenescence. The doctor is struck by a remarkable change in the "features and conditions" of the male trio, noting the "rapidity" of a "strange metamorphosis" in which "Wycherley was indeed growing younger while

his companions were growing proportionally older" (5). His physiological explanation for this phenomenon draws on understanding of the blood's circulatory function first established by William Harvey's discovery in the seventeenth century, together with a conceptualization of the body as an energy system with limited vital reserves.[2] He extends this thinking to imagine its possible implications and applications for the regeneration of the ageing body:

> [Wycherley], therefore, took a fresh start, so to speak, in life with a large capital of new blood, and since then he had only been contributing to one-third of the supply to the common stock or partnership circulation. Accordingly, only one-third of the common blood was being assimilated by old organs, while two-thirds were being assimilated by young and robust ones. In addition to this, Wycherley's assimilative organs were being fed, and their waste carried off, by blood which was day to day becoming younger as the process went on (5).

Estimating that the old man is growing young twice as fast as the younger men are growing old, the doctor draws up a mathematical calculation for the "rate of rejuvenescence" based on their age in years, concluding that once a "a stable equilibrium in the condition of the trio" had been reached, the result would be "three robust men of twenty-eight" (5). Conceding only momentarily that the procedure might appear objectionable from "a moral or religious standpoint", he conceptualizes this redistribution of vital forces across young and old bodies as "a process of equalization" (5). The older man's senescence is diluted across the three participating bodies, in a transfer of vital energy through the material conduit of blood. Wycherley's altered appearance is striking, and attracts considerable interest in the local community. Conversely, the young men, though "prematurely matured" as a consequence of the operation, attract no pity due to the fact that they have been "paid liberally" by the physician for "the loss of their vitality" (5). They receive two hundred dollars for their participation initially and a subsequent payment of twenty dollars a-piece for every day that they continue to supply the older man with their blood. In this experimental medical marketplace, corporeal energy is a commodity for which economic capital becomes a normalized return.

Restored not only to good health, but to a physiological age of 28, Wycherley completes his transformation from "sedate, country squire" to young fashionable

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[2] For a contemporary edition of Harvey's seminal publication, see *On the Motion of the Heart and Blood in Animals*, George Bell and Sons, 1889.

gentleman when he calls on the services of a new tailor back in the city, supplementing his physical renewal with the social signifiers of youth. The final index of his rejuvenation is supplied in the story's conclusion. Wycherley discovers that his 23-year-old son, due to return by boat from a trip abroad, has died during the vessel's passage and been buried at sea. Meeting his son's young fiancé to break the news, Wycherley finds that this "tall, handsome brunette with delicate features and a graceful figure" mistakes him for the younger man (6). Though he tries to convince her of his true identity, she nonetheless believes that the father is in fact the son, and he is accepted as such amongst both family and friends. His new life is testimony to the successful reversal of a generational displacement by which the young take the place of their parents. Milne's story does not offer a final reflection on the morality or desirability of the union, or the medical procedure which facilitated it. It simply narrates the tale without interpretive summation.

"The Man Who Grew Young Again" represents a curious intersection of two prominent *fin-de-siècle* literary genres: the gothic and science fiction.[3] The story combines a vitalistic, quasi-mythical understanding of the blood as the mysterious "pure life-fluid" of the body – the substance of vampiric appropriation – with an empirical perspective on its function in preserving "the valvular action of the heart and the circulatory system" (4). Buried in the pages of literary magazine archives, Milne's tale has not, to my knowledge, received critical attention. Yet, the story testifies to both practical and fantastical interest in medical interventions made to the senescent body in the late nineteenth century. The discourses surrounding the physical and sexual regeneration of the middle-aged Wycherley would recur in literary fictions of the early twentieth century featuring the "rejuvenation" of male energies under scrutiny in this chapter: racial identity, the use of animal parts in human surgeries, and bodily repair as commercial transaction.

In titling his story "The Man Who Grew Young Again", Milne tuned his fiction of intergenerational corporeal commutation into the widespread discursive interest in the ageing body explored in the previous chapter of this thesis. Positioning Milne's text in relation to both the mythical and medical meanings of blood at this particular historical moment provides illuminating context for the writer's choice of blood transfusion as the quasi-scientific means of reclaiming youthful energy and appearance. "Moved between

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[3] For a useful overview of the gothic as genre, see Introduction, *The Oxford Book of Gothic Tales*, edited by Chris Baldick, Oxford UP, 1992, pp. xi-xxxii. For more on the emergence of the science fiction genre during this period see the introduction to this thesis, pp.20-21.

bodies – by bathing, drinking, or transfusing into veins", writes the medical historian Kim Pelis, "blood has been used to rejuvenate failing human bodies and souls" ("Blood Transfusion"). Its particular associations with the restoration of aged bodies are the stuff of ancient legend: the Ancient Kings of Egypt were said to have bathed in blood for this reason (Learoyd, "Part 1" 309), and in the seventh book of Ovid's *Metamorphoses*, Medea rejuvenates Jason's aged father Aeson using a concoction containing the blood of his son.[4] This thinking, rooted in ancient and medieval humoral understandings of the body, was supplemented with scientific investigations into the composition of the blood and the means of transfusion from the seventeenth century onwards.[5] Blood transfusions remained a topic of medical debate throughout the 1870s and 1880s, as scientists investigated both direct and indirect methods of transferring blood between human bodies, and as anaesthesia helped to lower the mortality rate for the procedure.[6]

By the time Milne's story was published in the 1880s, a hybrid conceptualization of the substance which combined both vitalistic and empirical understandings dominated the medico-cultural imagination. Such was the pervasiveness of this view that an article on "Transfusion of Blood" published in *Scientific American* in 1876 tried to offer clarification on "blood rejuvenation" by citing "absurd ideas…that the old can be made young again by the influence of transfused blood: the weak can be made strong, the sick healthy". It was precisely this speculative possibility, however, which informed Milne's literary enterprise. "The Man Who Grew Young Again" represents an early example of the ways in which a vitalistic understanding of the human organism, located at the intersection of medical research and cultural interpretation, underscored growing interest in the possibilities of regenerating the ageing body. Anchored in industrial capitalism's

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[4] See Ovid, *Metamorphoses*, edited by E.J. Kenney, Oxford UP, 1998, pp. 149-53.

[5] In 1615, the German doctor and alchemist Andreas Libavius proposed an experiment which would connect the arteries of an old man to those of a young man, suggesting that "the hot and spirituous blood of the young man will pour into the old one as it were from a fountain of life, and all of his weakness will be dispelled". See *Appendix Necessaria Syntagmatis Chymicorum*, Nicolaus Hoffmannus, 1615, p. 279, cited in Phil Learoyd, "The History of Blood Transfusion prior to the 20th Century: Part 1", *Transfusion Medicine*, vol. 22, no. 5, October 2012, pp. 308-14 (p. 310). The English physician James Blundell undertook transfusion experiments with animal and human subjects in the early nineteenth century, achieving the first successful transfusions of human blood in the early 1800s. See Phil Learoyd, "The History of Blood Transfusion prior to the 20th Century: Part 2", *Transfusion Medicine*, vol. 22, no. 6, December 2012, pp. 372-76 (pp. 372-74).

[6] On these debates, see Kim Pelis, "Blood Transfusion" in *The Oxford Illustrated Companion to Medicine*, edited by Stephen Lock et al., Vol. 3, Oxford UP, 2006.

new functionalist definition of manhood, its open-ended fantasy is one not just of senescence "cured", but the rehabilitation of aged male sexuality.

Milne – who was educated at the University of Oxford and had a background in technology and science – drew on particular medical developments pertaining to the function and manipulation of the blood to frame his story of rejuvenated male energies. Criticism on literary representations of ageing and masculinity during the *fin de siècle* has focused predominantly on Oscar Wilde's *The Picture of Dorian Gray*, first serialized in 1890, and on representations of aged male figures in the work of other British canonical authors such as Charles Dickens and Anthony Trollope (Chase; Heath). Yet Milne's story from 1887, together with another lesser-discussed story published by Jack London in 1889 which I consider later in this chapter, suggest a wider cultural preoccupation with the emancipatory possibilities and moral implications of male "rejuvenation" in the decades surrounding the turn of the twentieth century. They also gesture explicitly towards the discourses of experimental medicine which informed them.

Defining "rejuvenation"

Humankind has long held a fascination with the fantasy of immortality and its more modest, real-world counterpart: longevity. Around the turn of the twentieth century, growing interest in the capacities of the ageing body in relation to its more youthful analogue generated a particular investment in the possibilities of "rejuvenation".[7] The OED definition of the term as "the action or process of rejuvenating a person of thing, or of being rejuvenated; restoration to youth or freshness" underscores two crucial elements of rejuvenation as idea and as practice.[8] Firstly, whilst longevity indicates the extension of the life span into the future, rejuvenation suggests a reversal of the biological clock: a return to a previous physical state of youthfulness ("re" + "juvenescence"). Secondly, it gestures towards its transformational characteristics: the "action or process" of restoration, rather than the condition of rejuvenation as an achieved state. These twin foci on youth, together with the means by which it might be achieved, underscored widespread fascination with – and appetite for – rejuvenation in the period covered by this thesis.

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[7] For historical overviews of rejuvenation prior to the late-nineteenth and early-twentieth centuries, see M.B. Levick, "Pursuit of the Elixir of Life: Dr. Steinach's Predecessors Had Recipes for Changing Old Men into Young in 1600 B.C.", *The New York Times*, 9 September 1923: SM9; Eric Trimmer, *Rejuvenation: The History of An Idea*, A.S. Barnes 1970; S. Romm, "Rejuvenation Revisited", *Aesthetic Plastic Surgery*, vol. 7, no. 4, December 1983, pp. 241-48.

[8] "rejuvenation, n.", *OED Online*, Oxford UP, March 2016.

The word was used casually in discussions of a variety of activities pertaining to physical and mental health. From around the turn of the twentieth century onwards however, it also took on particularized meaning, describing medical theories and practices which sought to restore the body to a youthful state through surgical interventions targeting the glands. These practices have attracted the interest of a modest body of medical historians, who have focused predominantly on the work of the well-known physicians Eugen Steinach and Serge Voronoff (Schultheiss et al; Kozminski and Bloom; Sengoopta; Hirshbein). The corresponding cultural meanings of rejuvenation have been explored in more piecemeal fashion, by Susan Squier, Brett A. Berliner and Teresa Mangum. However, the traffic of critical conversation between these clinical and cultural histories of rejuvenation has been limited.

My own account of rejuvenation across the final two chapters of this thesis encompasses both chemical and surgical practices from the penultimate decade of the nineteenth century through to the 1920s. I read the fashion for glandular rejuvenation which peaked in the latter period as one particular – albeit heavily visible – episode in this overall history. I also consider medical rejuvenation and rejuvenation fictions in tandem, examining a selection of literary and filmic texts featuring the revitalization of senescent protagonists in conjunction with the particular therapeutic regimes which informed their imaginative production. Like the electricity cures which purported to reactivate the labour-power of fatigued and neurasthenic bodies discussed in Chapters Two and Three of this thesis, rejuvenation treatments promised to restore the depleted energies of ageing men and women and so renew their respective social and economic functions. Employing an interdisciplinary approach to this topic which moves between medical and scientific detail on the one hand, and close readings of literary texts on the other, I offer an account which aims to extend and deepen understanding of the ways in which rejuvenation reflected, and helped to shape, contemporary perspectives on physical and sexual health, and on age, class and gender.

The elixir of life: "The Rejuvenation of Major Rathbone"

In "The Man Who Grew Young Again", Robert Duncan Milne drew on a long-standing vitalistic interpretation of the blood as a rejuvenating life-force. This persisted in the medico-cultural imagination even as a biological understanding that might have contested it developed. Elsewhere, however, blood was the subject of interest not as an entity in itself, but as a vessel for chemical substances which, according to some contemporary scientists, had the capacity to reverse the biological processes of ageing. In a paper

published in July 1889 in the *Lancet* based on a series of lectures delivered at the Société de Biologie in Paris, the French-American neurophysiologist Charles Edouard Brown-Séquard attributed weakness in old men, in part, to the "gradual diminishing action of the spermatic glands" (105). The 72-year-old scientist reported the results of an experiment in which he had injected himself subcutaneously with a solution containing "a small quantity of water mixed with the three following parts: first, blood of the testicular veins; secondly, semen; and thirdly, juice extracted from a testicle, crushed immediately after it has been taken from a dog or a guinea-pig" (105). As a result, he announced, he had regained a capacity to work he had not possessed for years, and which he sought to quantify in a series of empirical measurements. He concluded that his energy levels had been restored to the same levels he had measured in himself at 60, and that his forearm strength corresponded with the results of similar tests he had taken aged 46 (106). His paper announced semen as an energizing substance: seminal fluid, secreted by the testicles and then reabsorbed into the bloodstream, he concluded, "possesses the power of increasing the strength of many parts of the human organism" (106).

Brown-Séquard's research marked the beginnings of expanding scientific interest in the internal secretions of the body which would result in the discovery of "hormones" and the emergence of the discipline of endocrinology in the early twentieth century.[9] His work has been considered in relation to this early history of endocrinology,[10] but its widespread impact on both medicine and culture within the history of rejuvenation has been overshadowed by a predominant critical focus on the contributions of 1920s figures such as Eugen Steinach and Serge Voronoff (whose work I consider later in this chapter). This omission is particularly surprising given the fact that Brown-Séquard's pronouncement on the rejuvenatory promise of testicular gland extracts was a media sensation, sparking widespread demand for "organotherapy" in the late 1880s and early 1890s.[11] In the weeks and months following the publication of Brown-Séquard's *Lancet*

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[9] In *Neurasthenic Nation*, Schuster notes that "the term *hormone* had existed since the days of Hippocrates to denote an essential life force, but it was British physiologists William M. Bayliss and Ernest H. Starling who first used it in a modern sense to describe glandular secretions that influenced bodily function" (pp. 142-43). See also: John Henderson, "Ernest Starling and 'Hormones': An Historical Commentary", *Journal of Endocrinology*, vol. 184, no. 1, January 2005, pp. 5-10.

[10] See, for example, Merriley Borrell, "Brown-Séquard's Organotherapy and its Appearance in America at the End of the Nineteenth Century", *Bulletin of the History of Medicine*, vol. 50, no.3, Fall 1976, pp. 309-320, and Henderson, ibid.

[11] "The treatment of disease by the administration of preparations from the endocrine glands or other organs". "organotherapy, n.", *OED Online*, Oxford UP, March 2016.

article, American newspapers provided extensive coverage on his discovery.[12] Editorials and reports focused on the apparently rejuvenatory power of Brown-Séquard's extract, seeking the opinions of a range of physicians on its efficacy. The ubiquity of the coverage was such that the verb "elixired" came into slang use ("'English As She Is' Butchered"). A flurry of articles kept readers up to date with the outcomes of the operation on older working men across America. In Washington, D.C., the procedure was performed on a 52-year-old night watchman, who reported improved physical performance at work ("Feels Like a New Man"), whilst in Kansas City, the glandular extract was administered to men at a home for the aged, and their restored vitality recorded ("Trying the Brown-Séquard Elixir"). One *Washington Post* article included news on the results of operations carried out in Ohio, Delaware, Indianapolis and New Orleans ("Old Age Seeks Youth"), and the well-known Georgian Civil War veteran Colonel I.W. Avery claimed publicly that the elixir had assisted his rehabilitation ("Colonel Avery's Story").

A portion of this reportage framed the treatment as a miracle-cure, citing cases of men in their sixties and seventies paralysed with rheumatism who had found themselves able to walk again ("Young Again"; "New Life in Them"). One national newspaper piece titled "Doctor Brown-Séquard's Three Wives" characterized the twice-divorced physiologist as the embodiment of rejuvenated manhood not just in terms of his renewed physical strength, but also of his sexual prowess. Brown-Séquard himself told the press that the "recuperative and revitalizing" treatment had left him "astounded" at his "unwonted activity" ("Famous Elixir of Life"). The rejuvenatory narrative associated with his discovery took on a life of its own in translation from scientific publication to public discourse. A commercial trade in rejuvenating serums marked as the "elixir of life" traded on Brown-Séquard's name and well-known experiments, but did not have the scientist's approval. In the autumn of 1889, he expressed his objection to this widespread terminology, insisting that "I have never made use of the word 'elixir', still less of the words 'elixir of life'. These are all expressions or inventions of sensational newspapers" ("Gossip Sent by Cable"). Despite his clarifications and denials, a range of patent formulas containing testicular juices entered the medical marketplace. Demand for some of these, such as "Pohl's Spermine Preparations" lasted into the 1920s, and in doing do, outlived the credibility of the Brown-Séquard operation itself (Hall 296). By the turn of

[12] "Dr. Brown-Séquard's Hypodermic Fluid", *BMJ*, vol. 2, no. 1488, 6 July 1889, p.29; "Old Age Seeks Youth: Decrepit Humanity Panting for the New Elixir of Life", *The Washington Post*, 15 August 1889, p. 7; "Doctors Who Disagree: The Brown-Séquard Elixir Divides the Medical Profession", *The New York Times*, 23 August 1889, p.4.

the century, the furore surrounding Brown-Séquard's discovery had diminished, and in the absence of lasting positive results in patients undergoing organotherapy, the practice largely disappeared (Borrell).

The speculative possibilities raised by this apparent discovery of a chemical rejuvenator for old men, however, occupied a continuing place in the popular psyche. In the same decade that Jack London produced the tramp writings explored in Chapter Three of this thesis, he also wrote a diverse number of fictional short stories. One of these, completed in June 1899 (J. Williams 175) and published in the Chicago-based *Conkey's Home Journal* in November of the same year, drew explicitly on the furore surrounding Brown-Séquard's "elixir" a decade earlier. "The Rejuvenation of Major Rathbone", which has received little attention from scholars of London's oeuvre, represents a more cautionary approach to the implications of medical rejuvenation for the ageing male than Milne's story of "The Man Who Grew Young". The narrator of London's medical science fiction relates the story of a singular experiment carried out by his friend, a physician named Dover Wallingford. Wallingford's perspectives on ageing are anchored in a thermodynamic paradigm of the body, but his theorizations focus less on the human organism as an economy of energy and more on its material composition:

> 'Now, what is death? Simply the wearing out, the exhaustion, the breaking down of cells, tissues, nerves, bones and muscles of the human organism. Surgeons find great difficulty in knitting the broken bones of elderly people. Why? Because the bone, weakened, approaching the stage of dissolution, is no longer able to cast off the mineral deposits thrust in upon it by the natural functions of the body…Yet, were it possible to remove the large deposits of phosphate, carbonate of soda, and so forth, the bone would regain the spring and rebound which it possessed in its youth' (54).[13]

This logic, which conceptualizes old age as a process of both cellular atrophy and chemical accretion, undergirds a rejuvenatory rationale which finally reverts to the language of mythology: "Merely apply this process, in varying measures, to the rest of the anatomy", he argues, and the result will be "the retardation of the system's break-up, the circumvention of old age, the banishment of senility, and the recapture of giddy

[13] This, and all subsequent quotations from the text, are taken from *Selected Science Fiction and Fantasy Stories: Jack London*, Fictioneer Books, 1978, pp. 53-64.

youth…To turn back the dial of life, to revere the hour-glass of Time and run its golden sands anew" (54).

As Wallingford produces a vial containing "a heavy, almost colourless fluid", together with a hypodermic syringe, the narrator notes that "the Brown-Séquard Elixir and Koch's experiments with lymph darted across my mind" (54, 55). London's conflation of these scientific developments was not merely conjectural: the clear fluid is a fictional synthesis of two glandular solutions that had featured prominently in experimental biology. News of the development of lymph preparations for the treatment of tuberculosis by the bacteriologist Robert Koch circulated in the American press throughout the 1890s alongside reports of Brown-Séquard's discovery.[14] London's protagonist, Wallingford, is the fictional counterpart to these real-world scientists, and he positions his own work as a continuation of that begun by his predecessors. He has succeeded in clarifying compounds which will enact cellular renewal, producing "an animal derivative to stay and remove the effects of senility by acting upon the stagnated life-cells of any animal organism". An "infusion" of this compound results in "anatomical changes" which affect the muscular tissues (55).

Having successfully rejuvenated his dog, Wallingford is keen to test the rejuvenator on a human subject, and selects his own uncle, Major Rathbone, for the task. Over a period of three months, the narrator assists Wallingford in his laboratory as the compound is administered to the willing patient. The older man's appearance is transformed: "the colour returned to the Major's pallid skin, the muscles filled out, and the wrinkles in part disappeared". He regains the athletic strength of his younger days: the two men observe his surprising "snap and energy", adding that "lusty youth so rioted in his blood that toward the last we were often hard put to restrain him" (57). The "feeble old man" becomes an "impetuous old giant", though he retains some lingering physical and temperamental signifiers of old age in his "snow-white hair" and the "irascibility…of advancing years" (57, 58). His reclaimed physical capacity facilitates a number of activities that together constitute a virtual manifesto for strenuous youthful masculinity. Breaking free from laboratory supervision for a few hours, the Major gets into a fight with younger men in the village who insult his apparent senility: expert blows from the rejuvenated older man "stretched the three brutes in the muck of the street" (59). His

[14] In addition, Merriley Borrell has cited correspondence between Brown-Séquard and his colleague Jacques-Arsène D'Arsonval dating from 1890 as evidence of experimental connections between the two areas, noting that "'Koch's lymph' and 'Brown-Séquard's fluid' were tested side by side". See Borrell, "Brown-Séquard's Organotherapy", p. 314.

renewed vigour reactivates his sportsmanship: he shoots game and breaks in horses, outpacing younger male riders. He also enters politics, suppressing labour agitation at a local mill and taking up a mayoral appointment, and when the US declares war against Spain, he applies to the war department for a commission.

This extensive metamorphosis is not unequivocally positive. The effects of the Major's medically-engineered renaissance elude scientific control: "after revivifying an aged person, that person passes wholly out of our power", warns Wallingford; "we can impose no checks, nor in any way can we tone down whatever excess of youthful spontaneity we may have induced" (61). He concludes that great care is required in the administration of the rejuvenating fluid "if we should wish to avoid all manner of absurdities in the conduct of the patient" (62). The Major's excess energy becomes a cause for social concern; "while such activity would have been commendable in a younger man, in one of his advanced years it seemed so inconsistent and inappropriate that his friends and relatives were shocked beyond measure" (60). Although the story does not give particular details of the Major's improprieties, it is clear from the scientist's solution to the problem that the issue is partly one of sexual conduct. Having cured the Major of old age, Wallingford articulates the need for an additional remedy to bring his patient back within the boundaries of socially-acceptable behaviour: "It seems that before we can foist this rejuvenator upon the world, we must also discover an antidote for it", he muses, "a sort of emasculator to reduce the friskiness attendant upon the return to youth, you know" (61). The "emasculator" they select is not a chemical formula, but a social contract. Wallingford applies the same rejuvenating treatment to Miss Deborah Furbush, a former love-interest of the Major now bed-ridden with old age. This solution proves to be efficacious: the Major's reactivated primitive urges are contained within the parameters of heterosexual marriage, and he also scales back his other ambitions, declining his war commission to focus on life with his new wife.

On the one hand, "The Rejuvenation of Major Rathbone" is a fantasy of senile manhood powerfully restored, charting the symbolic triumph of the old man in an intergenerational competition which increasingly prioritizes able-bodied youth. On the other hand, London's story captures the inherent ambiguities of social and gendered discourses on male rejuvenation inherent in Brown-Séquard's original discovery and the media sensation which followed it. Although much of this coverage had focused predominantly on renewed strength, the testicular origins of the glandular extract generated connotations of sexual performance. Major Rathbone's transformation is a case

study in the plasticity of predominant attitudes towards ageing masculinity, one which revels in the promise of male rejuvenation whilst also undercutting it. Male sexuality is the particular node of the matter. The "emasculator" operates in a figurative sense of the word to moderate the Major's apparently boundless energy in public life. At the same time, it carries the primary sense of dampened virility: an old man's sexual appetite is permissible only when monogamous, institutionally-sanctioned, and socially invisible.

Glandular surgeries: rejuvenation by "Steinach" and "Monkey-Gland"

This same ambivalence was to persist into the early decades of the twentieth century, as new methods of medical rejuvenation were sought and developed. Brown-Séquard's experiments with the body's internal secretions prefigured the growth of endocrinology from the early years of the twentieth century onwards. His proposed solution had been the intravenous allocation of a chemical formula to the senile corpus. Twenty years later, other physicians formulated surgical glandular operations designed to restore the body's youthful function and appearance. The invasive methods proposed by Eugen Steinach and Serge Voronoff – the two most prominent rejuvenators of the 1920s – generated a level of interest in Britain and the US even more extraordinary than that sparked by Brown-Séquard's elixir.

Steinach, Professor of Physiology at the University of Vienna, had begun work on the sex glands in the 1890s. In 1912, he presented an outline of his investigations into rejuvenation to the Academy of Science. The question he was concerned with, he reported, was "whether the process of aging is a state which we face helplessly, like an incurable disease, or whether senescence can be influenced, at least within certain limits". His experiments, he announced, "decided in favour of the alternative" (Thorne, "Dr. Steinach"). Over the course of the subsequent two decades – during which he received six nominations for the Nobel Prize in Physiology (Sengoopta *Most Secret* 244) – Steinach investigated the role of the sex glands in determining sexual characteristics and behaviours, and offered a new hormonal intervention to restore the ageing body.[15] Experimenting with animals in the 1910s, Steinach had observed that the reimplantation of sex glands into castrated subjects resulted in what he termed "hypermasculine" or

[15] Steinach published the results of his experiments in German. My primary interest therefore lies less in Steinach's scientific research *per se*, and rather in the conceptualization of rejuvenation formulated in the medico-cultural imagination. For a bibliography of Steinach's German-language publications, see Eugen Steinach, *Sex and Life: Forty Years of Biological and Medical Experiments*, Viking, 1940, pp. 289-97.

"hyperfeminine" anatomy and behaviours (Sengoopta "Rejuvenation" 60). From this, he devised a procedure that he believed would stimulate the body to secrete hormonal substances and so restore youthful vigour.[16] The first Steinach operation on a human subject was performed by the genitourinary surgeon Robert Lichtenstern in Vienna in 1918 (Kozminski and Bloom 1131). Addressing the rejuvenation phenomenon in 1925, Morris Fishbein, editor of the *Journal of the American Medical Association*, identified the publication of a paper by Steinach in 1920 on the rejuvenation of senescent glands as "the opening gun in the great international scramble for priority recognition in the alleged discovery of the profound secret of restoring lost youth and youthful vigor" (161). Fishbein's assessment corresponded with increasing coverage of rejuvenation in the American press from 1920 onwards which would shape rejuvenation in the popular imagination.[17] "Alas", Fishbein added, "as one reads the scientific data of the discoveries and compares it with the discussions that appeared in the newspapers, one begins to wonder where the facts of the scientist actually end and where the dreams of the inspired theorists and the exuberant journalists begin" (161).

The imaginative appeal of rejuvenation far outstripped the reality of its success. Despite the impression given by extensive news coverage, estimates for the number of patients who actually underwent the procedure in the 1920s ranged between a few hundred and a few thousand, and Steinach's correspondence often included complaints about the scarcity of patients (Sengoopta *Most Secret* 92).[18] However, the majority of Americans could follow news of the operation in the pages of the national and local press, where a number of scientists popularized the idea. One of the most vocal proponents of the new rejuvenation technique was the New York endocrinologist Harry Benjamin, who operated on hundreds of patients. Speaking to *The New York Times* about his experience working under Steinach in Vienna during a three-month sojourn, Benjamin corroborated

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[16] For the technical detail of the Steinach operation, see Romm, "Rejuvenation Revisited", pp. 241-248; Laura Davidow Hirshbein, "The Glandular Solution: Sex, Masculinity, and Aging in the 1920s", *Journal of the History of Sexuality*, vol. 9, no. 3, July 2000, pp. 277-304; Chandak Sengoopta, "'Dr Steinach Coming to Make Old Young!': Sex Glands, Vasectomy and the Quest for Rejuvenation in the Roaring Twenties", *Endeavour*, vol. 27, no. 3, September 2003, pp. 122-26.

[17] According to keyword searches for "Steinach" and "rejuvenation" on the *ProQuest Historical Newspapers* database, www.proquest.com/products-services/pq-hist-news.

[18] Peter Schmidt, "Six Hundred Rejuvenation Experiments" in *Third Congress of the World League of Sexual Reform*, edited by Norman Haire, Kegan Paul, 1929, pp. 574-81. Sengoopta notes that an American journalist estimated in 1926 that more than 8,000 men underwent the Steinach procedure in the US and "perhaps three times that number in Europe". See *Most Secret*, p. 87 and p. 260, note 125.

reports of the operation's efficacy, stating that as a result, "Elderly men regain youthful appearance, grow more hair, and do more work." He conceded that "rejuvenation" was not an accurate term to describe the outcome because of the possibility it afforded for exaggeration, suggesting the phrase "a surgical retarding of senility" instead ("Gland Operation to Retard Senility").

The particular associations of the word "rejuvenation" with dramatic transformation and regained youth, however, embedded the term in the cultural consciousness. In his own comments on the effects and possibilities of the operation, Steinach oscillated between clinical observation and quasi-philosophical bombast. In one newspaper piece, he reported that his treatment would provide "restoration of failing memory, strengthening of sight and hearing, gains in weight and in mental and physical vitality and growth of pigmented hair" ("Dr. Steinach Coming"), whilst in another, he announced that "there is such a thing as young old men…I have shaken up mankind, and the thought that virility can be revived by a resurrection of the internal secretion will not let humanity rest henceforth" (Thorne, "Dr. Steinach"). By 1923, *The New York Times* reported that Steinach's operation was being performed in "every large city in the United States and in Continental Europe", its profile boosted by accessible book-length overviews of his research for a non-specialist audience ("Gland Treatment Spreads").[19]

British newspapers kept readers up to date with Steinach's theory and reported on the rejuvenation of appearance, mental faculties and physical capacity "even in cases of men of sixty-five to seventy years of age" ("Back to Youth").[20] The chief popularizer of Steinach's work in Britain was the Australian sexologist Norman Haire. His book on rejuvenation – written to appeal to the "educated layman" and the "scientific reader" alike – cited the importance of internal testicular secretions in the formation of healthy masculinity (*Rejuvenation* 5). Haire reported that contemporary science demonstrated this was the "the chief factor governing the physical and psychical sexual characters of the male as well as determining the direction of his sexual desire towards the female" (23). Haire also took care to disambiguate the operation from the potentially demasculinizing

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[19] George F. Corners, *Rejuvenation: How Steinach Makes People Young*, Seltzer, 1923; Paul Kammerer, *Rejuvenation and the Prolongation of Human Efficiency: Experiences with the Steinach-Operation on Man and Animals*, Boni and Liveright, 1923.

[20] See also, for example, "The Renewal of Youth: Professor Steinach and His Experiments", *The Observer*, 5 September 1920, p.13; "Rejuvenation By Gland: As Safe as Anything in Surgery", *The Manchester Guardian*, 11 September 1923, p.8.

implications of an actual vasectomy. Not all of Steinach's patients are sterilized, he asserted: "if the operation is performed on one side only, the patient remains quite fertile, and can produce children of either sex from the unoperated side" (11).

The contribution of Steinach's work to a significant media storm surrounding the promises of rejuvenation was matched by considerable interest in the alternative method of Serge Voronoff. A French surgeon of Russian extraction, Voronoff built on the work of Brown-Séquard in experiments with the transplantation of animal glands and tissues in the 1910s (Hamilton 11). From 1917, his attentions turned to the transplantation of interstitial glands into testicular tissue and its effect on senility (Sengoopta "Rejuvenation" 61-62). In 1919, he extended his work to xenotransplantation, inserting specimens taken from apes and chimpanzees into human subjects (Randau). Where Brown-Séquard had suggested that liquefied extracts from the testicle could revitalize the flagging organism, Voronoff's method involved the insertion of the entire testicle into the patient's body to restore glandular function and overall vitality. In his 1920 book for the general reader titled *A Study of the Means of Restoring Vital Energy and Prolonging Life*, he charged that "In the manifestation of his physical and intellectual qualities, varying according to the individual, man himself is worth whatever his sex glands are worth" (58).

Newspapers on both sides of the Atlantic reported on what was commonly referred to as the "monkey-gland operation". *The New York Times* described the gathering of prominent physicians to witness two of Voronoff's students transfer interstitial glands from a monkey into the body of the writer Irving R. Bacon at the Majestic Hotel ("To See Monkey Gland Test"). "Nearly every newspaper and magazine that one picks up contains some reference – jocular or serious – to monkey glands and goat glands and their beneficent possibilities in human gland nurture and repair", Van Buren Thorne observed in 1922, and he corroborated reports of the operation's success in restoring male prowess: "Within a few days the sallowness of age is replaced by the healthy flush of youth, and the improved circulation causes increased functional activity" ("The Craze").

Despite the clear clinical differences in Steinach and Voronoff's surgical techniques, and repeated disambiguation in newspaper reports,[21] their rejuvenation efforts were often conflated in the public imagination. Attending to "general misapprehension

[21] "By the Steinach method the patient does not receive the gland secretion of a monkey or any foreign substance, but his own glandular activity is revived and strengthened". See "Gland Operation to Retard Senility", *The New York Times*, 20 November 1921, p. 34. See also "Gland-Grafting", *The Times*, 24 October 1923, p. 13.

and ignorance" surrounding rejuvenation in 1924, Norman Haire observed that "When one speaks of rejuvenation even educated people will say, 'Oh Yes, I know. Monkey Glands. The thyroid, isn't it?'…Professor Eugen Steinach, of Vienna, is the most important authority in this field, and his researches have nothing to do with the implantation of the glands of monkeys or of any other animals into human beings" (*Rejuvenation* 6). Rejuvenation – regardless of the procedural specifics or the precise nature of its effects – gripped the public imagination. "The achievements, judged by rigid scientific standards, are no more than modest, but the possibilities are limitless", noted Benjamin Harrow, Associate Professor in Physiological Chemistry at Columbia University, adding that "It is because of these vast possibilities that an imagination not sufficiently tempered by self-criticism, is apt to enlarge a molehill into a mountain" (ix). This collective flight of fancy was not generated solely by a lay population insensible to scientific reason. The rejuvenators themselves established the conditions for such creative departures in both their medical writing and press comments, using anthropomorphism in their accounts of animal rejuvenation and dramatic language in their descriptions of human transformation.[22]

Rejuvenation as regeneration

The furore surrounding Steinach and Voronoff's rejuvenation claims in the late 1910s and early 1920s featured a particular rhetoric that popular interest in Brown-Séquard's experiments in the 1880s had lacked: the regeneration of a depleted nation. In the interim period, the First World War had placed renewed emphasis on the physical condition of the male population at various stages of the life course.[23] Writing in *The New York Times* in 1921, Van Buren Thorne attributed the close attention paid to rejuvenation in London and elsewhere on the Continent to "the ruthless wastage of the war" ("Dr. Steinach"). He reiterated this the following year in his pronouncement that "A war-ridden world has given place to a gland-ridden world" ("The Craze"). The enormous losses of large-scale warfare had amplified concerns about racial degeneration and the sense that civilization itself was displaying signs of senescence. Against this backdrop, rejuvenation emerged not just as rehabilitative medical discourse, but as an economistic narrative. Its renewed

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[22] See Hirshbein, "The Glandular Solution", pp. 283-84 and Kozminski and Bloom, "A Brief History of Rejuvenation Operations", *Journal of Urology*, vol. 187, no. 3, March 2012, p. 1131 for observations on the rejuvenators' evocative language.

[23] A 1915 article in *The Times*, for example, reported on recruits signing up only to find that they were deemed too old to fight. "Renewal of Youth", *The Times*, 16 February 1915, p. 9.

emphasis on a particular type of youthful masculinity spoke to the needs of nations also looking to regain industrial advantage.

In his book-length study of medical research into glandular and hormonal function from the late nineteenth century onwards, Chandak Sengoopta touches only briefly on the relationship between rejuvenation and contemporary discourses on fatigue, productivity and efficiency. Sengoopta's analysis is typical of the modest body of scholarly criticism on rejuvenation, which considers the interrelatedness of this phenomenon to discourses on labour-power and modern productivism only in passing. However, acknowledging and exploring these links underscores the intimate connection between medical narratives and their economic frameworks and makes for a more illuminating and perspicacious narrative about the underlying impulses which were animating it. Despite its brevity, Sengoopta's consideration of this angle provides a useful springboard for further critical analysis in this direction. "'Ability to work' is a key phrase in the history of rejuvenation research" he notes, adding that "In virtually all the case reports, 'inability to work' was one of the major complaints of the patient – especially in males – and 'enhanced energy and efficiency' were the earliest and most frequent improvements reported after the operation" (*Most Secret* 106). Although he does not elaborate on this particular point, a survey of newspaper reports covering the effects of Steinach and Voronoff's procedures testifies to this emphasis. Reporting on Steinach's claims, Harry Benjamin observed that "operations already performed have proved that senility can be retarded, and that a man who had reached a condition where he has had to give up his physical and mental work can be improved so that he can perform that work" ("Dr. Steinach Coming"). Accounts of rejuvenated professionals were printed alongside those of revitalized labourers. Benjamin even cited cases of industrial workers who had been in danger of losing their employment due to their inefficiency, before undergoing the Steinach operation and finding themselves with a renewed capacity for work ("New Clinical Aspects"). Such promises seemed to answer the needs of both the ageing male no longer able to earn a living in the same way he once could, and an economic system invested in the maximization of labour-power.

An American magazine feature on Voronoff published in 1920 iterated the implications of rejuvenation for the individual and national work ethic, asserting that "we must live longer, be young longer, not that we more greatly enjoy, not that we may bring more children into the world – but that we may do a full day's work instead of resting mid-afternoon in the valley of the shadow" (Dean). Voronoff himself drew links between

glandular power and physical energy, arguing that those men with "highly active testicles" were "vigorous and energetic" and displayed "a capacity for work, and the power of resisting fatigue". "In the graft", he announced, "science has given to humanity a means of increasing its vital capital" (*Rejuvenation By Grafting* 17-18, 51). "Rather than making old men young, the Steinach operation claimed to make aging people vigorous, energetic and productive", Sengoopta surmises. "It was not age…but energy that was the point at issue" (*Most Secret* 106).

Restored potency, then, was not the primary advertised outcome of either the Steinach or "monkey-gland" operations. Reports on the outcomes of these treatments on men emphasized a renewed capacity for work over the restoration of youthful appearance or sexual function. But the anatomical basis of the procedures – focused as they were on the secretions and manipulations of the testicles – generated particular associations with renewed sexual function in the collective imagination in the same way that Brown-Séquard's testicular substance had activated similar medical possibilities and cultural fantasies some decades earlier. And even as male sexual rejuvenation recommended itself as suitably sensational material for cultural appropriation once again, it was with distinct ambivalence that male writers in the 1920s explored the implications of resexualizing old men.

1920s literary fictions of male rejuvenation

"Whatever the validity of his claims, whatever the truth of criticism raised by the conservatives of the medical world against Steinach and against the gland transplantations of Dr. Serge Voronoff, the idea which they have brought forth in scientific terms has seeped into the popular mind like water into sand", a commentator for *The New York Times* observed in 1923 (Levick). Widely reported and debated in newspapers and periodicals, the idea also animated the literary imagination. Rejuvenation fictions have typically occupied a peripheral role in historical and medical accounts of rejuvenation in the 1920s. However, paying closer attention to these stories in conjunction with such histories provides new insight into the ways in which medical and cultural discourses converged and diverged in their formations of ageing masculinity.

Insofar as fictions of male rejuvenation in the 1920s have received scholarly attention, these limited discussions have focused on one particular story: Arthur Conan

Doyle's Sherlock Holmes tale "The Adventure of the Creeping Man".[24] Published simultaneously in *The Strand* Magazine in Britain and in the American monthly *Hearst's International* in 1923 but set in 1903, the story obliquely references both Brown-Séquard's "elixir" and Voronoff's xenotransplantation procedures. The tale centres on the 61-year-old Professor Presbury, a distinguished physiologist at an eminent university.[25] Holmes is called in to investigate the elderly professor's strange behaviour and discovers that a self-administered rejuvenating anthropoid serum has led him to develop ape-like characteristics. Conan Doyle's story unifies two distinct cultural anxieties surrounding the rejuvenation of ageing men.

Firstly, the story draws on contemporary concerns about the transference of animal characteristics to humans through cross-species medical treatment. On his return from a secretive trip to Europe, the professor's assistant notes an increased "energy and vitality" in the man, but he is also "furtive and sly", "irascible and violent", and his otherwise faithful wolf-hound begins to attack him (65, 54, 59).[26] In the days which follow, he is seen crawling down a passageway on "hands and feet, with his face sunk between his hands" (56). Departing from a visit to the professor's residence, Holmes and Watson observe him; a "tall, erect figure…leaning forward, his hands swinging straight before him, his head turning from side to side" (63). Secondly, this reverse-Darwinism performs a metaphorical function: the professor's bestiality is configured as a grotesque form of libidinous senile masculinity. Presbury, a widower, is motivated to rejuvenate himself ahead of his planned marriage to the young daughter of one of his colleagues. Holmes describes the circumstances of his engagement in censorious terms: "It was not, as I understand, the reasoned courting of an elderly man, but rather the passionate frenzy of youth, for no one could have shown himself a more devoted lover". His conduct in the matter is deemed "excessive and a little violent and unnatural" (53). Holmes' final moral pronouncement emphasizes that the real risk of testicular rejuvenation is not devolution to an anthropoid state, but regressive senile sexual appetite:

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[24] See Sengoopta *Most Secret*, pp. 111-12; McLaren, *Impotence*, p. 189.

[25] "The Adventure of the Creeping Man", illustrated by Howard Elcock, *The Strand Magazine* vol. 65, no. 387, March 1923, pp. 210-224; "The Adventure of the Creeping Man", illustrations by Frederic Dorr Steele, *Hearst's International*, vol. 43, no. 3, March 1923, pp. 8-13, 116, 118, 120.

[26] These, and all subsequent quotations, taken from "The Adventure of the Creeping Man" in *The Casebook of Sherlock Holmes*, Oxford UP, 1999, pp. 50-71.

> 'The real source [of evil]' said Holmes, 'lies, of course, in that untimely love affair which gave our impetuous Professor the idea that he could only gain his wish by turning himself into a younger man. When one tries to rise above Nature one is liable to fall below it. The highest type of man may revert to the animal if he leaves the straight road of destiny…There is a danger there – a very real danger to humanity. Consider, Watson, that the material, the sensual, the worldly would all prolong their worthless lives. The spiritual would not avoid the call to something higher. It would be the survival of the least fit. What sort of a cesspool may not our poor world become?' (70).

Holmes cautions that medical interference with the teleology of the life course poses a threat to the future of the race by facilitating the "material", "sensual" and "worldly" desires of those who are the "least fit" – in both physical and spiritual terms – to pursue them. In the reactivation of old men's lustful appetites, Conan Doyle's tale suggests, lies the path to degeneration.

"The Adventure of the Creeping Man" was not the first literary fiction to explore the implications of the furore surrounding monkey-gland rejuvenation in the early 1920s. The previous year saw the publication of *The Gland Stealers* by the British writer Bertram Edgar Guyton, under the pseudonym Bertram Gayton. Published simultaneously in London and Philadelphia but never reprinted, a surviving copy of the book held by Harvard Library has been digitized by Google Books and Archive.org. The narrator of the story is George Barnett, a 32-year-old widower and civil servant. Barnett's 94-year-old American grandfather Charles Henry Hadley comes to live with his grandson in London, where the old man's imagination is activated by newspaper reports announcing a new theory of rejuvenation by means of glandular grafting. With a financial incentive from Hadley's considerable fortune on offer, Barnett agrees to help the older man pursue the new treatment in order to combat "degenerative influences [and] bodily encumbrances". Following a successful operation at home which leaves the old man with "a superabundance of energy", the pair undertake a trip to Africa to capture live gorillas for gland-harvesting and establish a "Hospital for the Rejuvenation of the Aged" in the Kalahari desert (36, 70, 108). Together, they orchestrate a press campaign in England and successfully recruit a hundred other old men to receive the same treatment at the new hospital. The bulk of the novel follows various farcical attempts by the would-be-rejuvenates to capture live gorillas. Finally, a select number receive the treatment, the effects of which are subsequently found to be short-lived. All find themselves swiftly returned to their original senile states within a matter of weeks. Only Hadley retains his

reclaimed youthful energy – an exception which the narrator suggests is attributable more to the old man's positive attitude than to the medical procedure itself.

Gayton's satirical novel was released to a British readership likely to have been interested in, but cautious about, the monkey-gland rejuvenation practices of Serge Voronoff. Voronoff's procedure was implicated in the country's anti-vivisection debates (Rémy), and state regulation of the scientific use of animals led many British rejuvenation-seekers to travel to Paris to be treated by Voronoff there (Hamilton 113, 93). In the book, George expresses concern that his grandfather's efforts to obtain a monkey for medical purposes will lead to an intervention from the Society for the Prevention of Cruelty to Animals, and his ethical unease at the practice is stirred again when they collect a gorilla from a circus seller (Gayton 31, 50). Their decision to travel to Africa to obtain the required animals draws directly upon Voronoff's own crisis of supply and demand, which was extensively documented at the time in the popular press. Interviewed in 1920 at the Fifth Avenue mansion he shared with his American wife, Voronoff announced a shortage of monkey glands ("Tells How Old Men"), and in a separate interview, stated that he had "sent a man to Africa to get twenty apes and bring them to France" where he hoped they would breed ("Dr. Voronoff"). By October 1923, the practice had become so aggressive that the French governor of West Africa prohibited the killing of chimpanzees within the territory for the purpose of harvesting monkey-glands entirely ("Voronoff Wins Paris Cynics").

With his lowest reported fee for the procedure at 20,000 francs ("Thousands 'Rejuvenated'"), Voronoff gained a reputation for rejuvenating wealthy patients, including the well-known industrialist Harold McCormick ("Harry M'Cormick Under Knife"). Yet, the surgeon also keenly insisted on his humanitarian motivation: "I am not in this work for profit, but for humanity and for the pleasure and satisfaction of having made the discovery", he told a newspaper in 1920, adding that "I would as soon operate on a poor man as on a millionaire" ("Tells How Old Men"). A subsequent report stated that the surgeon bore the entire cost of his rejuvenation operations by drawing on his personal $5,000,000 inheritance (Fendrick 4). "I have not made a cent on these operations", he maintained, "though they are expensive" ("Expects to Replace"). In *The Gland Stealers*, Hadley's personal fortune facilitates his own rejuvenation and funds his efforts to rejuvenate other old men at no charge. Nonetheless, his aggressive colonial enterprise, occupying a grey area between philanthropy and commercial exploitation, corresponds closely with the ambiguities of Voronoff's real-life practice. Hadley and

Barnett plunder the African continent for material resources to bolster Western masculinity, enlisting the services of its inhabitants "in the aid of the aged and decrepit of our own race" (Gayton 111).

Gayton's novel gives particular details of Voronoff's medical procedure even though it does not name him directly. The newspaper report which alerts Hadley to the new medical discovery announces that "A scientist has already succeeded in grafting some interstitial glands (the secretions of which hold the source of vital forces) to goats and rams, which soon recovered their youth and vigor" (11). The specific transplanted material which rejuvenates Hadley however, and which he subsequently seeks to harvest in Africa, is not the interstitial gland, but the thyroid – the ductless gland which regulates the body's growth, development and metabolism. Correspondingly, the immediate effect of the procedure in the old men at the hospital who receive new glands is a general corporeal re-energization, as opposed to a sexual reawakening. This cautiousness drew praise from critics on the novel's release: "It is to Mr. Gayton's credit…that he has carefully avoided those aspects of the subject which would have been in questionable taste", opined the reviewer for *The New York Times* ("Latest Works" 27). The selected patients also undergo a broader programme of regenerative practices which include the "administration of radioactive potashes and thyroid gland extract", together with "the open air life" and "physical exercises" prior to their surgery (Gayton 295). The combined result is a group of men who "manifest a keen desire for activity", their "brains and bodies seething with superfluous energy" (Gayton 294, 295).

That the desired outcome is one of increased physical, not sexual, capacity, is further underscored by the novel's subplot surrounding Hadley's resurrection of an old love affair. As in London's "The Rejuvenation of Major Rathbone", Gayton's rejuvenated male protagonist resumes contact with his former flame – now a "white-haired old maid of seventy summers" – who also undergoes the treatment (Gayton 151). But whereas in London's story the rejuvenated woman functions as an "emasculator" – her own youth engineered to curb the rejuvenated man's excess energy for public life and sexual activity – in Gayton's novel, Hadley eschews marriage altogether, breaking off the engagement and choosing to remain in Africa for a further season of adventure. Like Major Rathbone before him, he is permitted a renewed physical vitality which is nevertheless characterized by emasculated restraint. *The Gland Stealers* also shares in the earlier story's intergenerational concerns about rejuvenation. In the process of deciding whether or not

to assist his grandfather in his rejuvenatory enterprise, Barnett expresses hostility towards an older generation of men in professional life:

> Everywhere one turned one saw old men in charge of the world – men of fifty and upwards. They monopolized all the best positions in the Government, in business, in literature, in law, on town councils, in the Civil Service, and in the army. They kept out the young and ambitious by sneering at their inexperience and hot-headedness; they scoffed at their love affairs; they even tried to arrange their marriages; and – most iniquitous of all – they arranged wars in which the young fought and died through the folly and greed of their forebears (109).

The intergenerational tensions of a particular post-war moment pervade Gayton's novel, which captures the young man's mixture of pessimism and optimism at the prospect of physiological renewal in old age. The true potential of this particular enterprise in male rejuvenation is ultimately realized elsewhere, in the novel's rather less sensational vision of strenuous youth. Throughout the course of the novel, George undergoes a transformation of his own: resigning from the civil service, he exchanges the trappings of suburban life for the exhilarating dangers of the African jungle. In this sense, Gayton's story corresponds with the true discursive character of the broader 1920s rejuvenation craze. Its ostensible focus on the sexual rejuvenation of an *old* man belies a related interest in the general energization of a *young* one.

Both "The Adventure of the Creeping Man" and *The Gland Stealers* acknowledged the collective idealism of youthful manhood reflected and reproduced by the medical rejuvenation procedures of the 1920s. Yet, their speculative explorations of the social implications of rejuvenated sexuality corresponded with the conceptualizations of senescence as a process of physiological degeneration, and as a state of necessary desexualization, promoted by physicians and health reformers such as John Harvey Kellogg (explored in the previous chapter of this thesis). These literary tales – like Jack London's earlier tale "The Rejuvenation of Major Rathbone" – exploited contemporary fascination with the ostensibly liberating possibilities of rejuvenation science for narrative interest. At the same time, in their morally-prescriptive and satirical representations of "senile sensuality" (Kellogg 115) and its social implications, they retrenched conservative perspectives on aged male sexuality. This same mixture of enthusiasm, traditionalism and scepticism also characterized cultural responses to the prospect of medical rejuvenation for women. But as I demonstrate in Chapter Six, discourses surrounding female ageing

and rejuvenation were configured along ideological lines which differed in key respects from those applied to men.

Chapter Six

Rejuvenated Female Energies

> 'Why, what is it – what is it?' she said confusedly. 'I am dazed. Surely the quality of the fire hath not altered. Can the principle of life alter? Tell me, Kallikrates, is there aught wrong with my eyes? I see not clear', and she put her hand to her head and touched her hair – and oh, horror of horrors! – it all fell upon the floor. 'Oh, *look! – look! – look!*' shrieked Job, in a shrill falsetto of terror, his eyes nearly dropping from his head, and foam upon his lips. '*Look! – look! – look!* She's shrivelling up! She's turning into a monkey!' and down he fell upon the ground, foaming and gnashing in a fit…Smaller she grew, and smaller yet, till she was no larger than a baboon. Now the skin was puckered into a million wrinkles, and on the shapeless face was the stamp of unutterable age. (Haggard, 355-56)

Here, at the denouement of H. Rider Haggard's 1887 novel *She*, the 2,000 year-old African queen Ayesha meets her death in the regenerative pillar of fire she has previously used to maintain her youthful beauty. Her own perceptive faculties suspended, Ayesha seeks visual information from the assembled onlookers. Three men are witness to her dramatic demise. The old servant Job issues a chanting invocation ('*Look! – look! – look!*') to his two male companions Holly and Leo – and to the implied reader. It is a summons to observe the macabre spectacle of accelerated female ageing. This extraordinary scene at the climax of Rider Haggard's tale expresses two related contemporary anxieties, of senile female sexuality and of degeneration. Ayesha's metamorphosis registers as both expedited menopausal change (the "million wrinkles", the "shapeless face") and biological devolution (the "monkey", the "baboon"). It also evokes corresponding degenerative transformations in the men who behold it. Reduced to a paroxysm of disgust, the elderly Job subsequently dies of shock. Meanwhile, Ayesha's dramatic hair loss – that visceral signifier of senescence – has a correlative effect on the younger man Leo. His own head of hair, formerly "the ruddiest gold", turns grey, and then "snow-white" and he is left looking "twenty years older" (360). In the final instance however, Ayesha's fatal failed attempt at rejuvenation reconciles the surviving men to their own age and mortality: when the pillar of fire returns, the protagonist Holly

eschews an opportunity to enter it with a new "distaste for the prolongation of my mortal span" (360).

First serialized in *The Graphic* magazine in Britain, and *Harper's Weekly* in the US between October 1886 and January 1887, then published in a single volume, Haggard's novel attracted huge attention and critical acclaim at the time of its release. A bestseller throughout the last decades of the nineteenth century and the first quarter of the twentieth century, the book, which has since been translated into over twenty languages and has not been out of print, continues to enjoy a wide readership.[1] There is much in Haggard's tale of imperial adventure for generations of readers to enjoy and admire, but Ayesha, the beautiful, authoritative, ageless queen at the centre of the tale, secured a particular place in the cultural imagination from the first. The sensational final scene, in which the woman's "immortal youth and godlike beauty" are destroyed "with shame and hideous mockery" (Haggard 358) drew special attention and commentary from reviewers following the book's release, who described it in turn as "weird", "nightmarish and ghastly", "awe-inspiring" and "inartistic".[2]

In the subsequent decade, its dramatic potential was swiftly recognized by early filmmakers seeking new subject matter to delight and enthral cinema-going audiences. In the short, hand-tinted trick film *La Colonne de Feu*, directed by the French magician and filmmaker Georges Méliès in 1899, a woman dressed in white is summoned by a green demon, and dances frenetically above a cauldron until she is consumed by a pillar of flame. Although it is unclear whether Méliès drew explicitly on Haggard's book for inspiration, the film's American distributors saw the commercial potential in making such a connection and released the film under the title *Haggard's She: The Pillar of Fire*. In the twenty-six years following the release of *La Colonne de Feu*, filmmakers were to draw on the story multiple times. Versions from American producers such as the Thanhouser Film Corporation (1911) and Fox Film Corporation (1917) sought audiences alongside British companies Barker Motion Photography/Lucoque (1916), and Reciprocity Films (1925). These filmmakers exploited the spectacular potential of Ayesha's demise, using visual trickery to stage her dramatic transformation. In some

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[1] For more on the publication history of the novel, see Peter B. Ellis, *H. Rider Haggard: A Voice from the Infinite*, Routledge and Kegan Paul, 1978.

[2] "Art and Literature", *The Newcastle Weekly Courant (Newcastle-Upon-Tyne, England)*, Friday 14 January 1887, p.6; "New Books", *The Derby Mercury (Derby, England)*, Wednesday 19th January 1887, p.6; "The Supernatural in Fiction", *The Newcastle Weekly Courant (Newcastle-Upon-Tyne, England)*, Friday 11 March 1887, n.p.

cases, they released accompanying promotional materials which traded on the visual and conceptual interest of this isolated scene (fig. 6.1).[3]

Fig. 6.1 Promotional still of Valeska Suratt as Ayesha in *She*, Fox Film Corporation, 1917.

From 1886 through to 1925, the spectre of Ayesha, as rejuvenant-beauty-turned-senescent-crone, animated the collective imagination. It was not, however, the only cultural form to display a fascination with the juxtaposition of young and old female bodies. Throughout this period, the rejuvenated woman was repeatedly filtered into literary stories and reproduced on screen. Another take on this theme was offered in the 1901 Pathé-Frères film *Rêve et Réalité*. In the opening scene, a moustachioed middle-aged man carouses next to a young woman at a restaurant table laden with drinks. As he leans in to kiss her, the scene cuts and the young woman is replaced by a male actor dressed as an old woman. The moustachioed lothario has woken to find that he is in fact in bed with his toothless old wife. Brushing off the affectionate advances of this older female partner, he turns his back and opts to go to sleep (figs. 6.2 and 6.3).[4]

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[3] The lasting cultural resonance of Haggard's tale, and the continuing commercial appropriation of narratives of female rejuvenation, are evident in the "Ayesha" anti-ageing facemask currently sold by the handmade cosmetics company Lush. See www.lushusa.com/face/masks/ayesha/06090.html.

[4] Pathé's film drew on another with the same premise released the previous year by the British filmmaker G.A. Smith, titled *Let Me Dream Again* (available to view at www.screenonline.org.uk/film/id/443139/).


Figs. 6.2 and 6.3 Stills from *Réve et Réalité*, Pathé-Frères, 1901.

Drawing on the film in her analysis of the ways in which early cinema typically engaged with the female form, Judith Buchanan notes that here, as elsewhere, "it is the male character whose subjective vision finds cinematic expression". Within this visual fantasy, "a flawed and ageing female body is reconfigured as a young, attractive and sexually accommodating one" ("Celluloid" 278, 279). Desirable female sexuality – that which powers the *rêve érotique* of the film's title – is visualized as nubility, and it is the source of social and sexual excitement. The film's big reveal – and punchline – relies on the viewer's agreement that this male flight of fancy is both necessary and understandable, given the sexually-uninviting *réalité* of female maturity.

In this chapter, I examine a selection of literary and filmic preoccupations with female rejuvenation which, like *She* and *Rêve et Réalité*, were inflected by contemporary gender ideologies. I begin by exploring the key social, medical and commercial contexts from which female rejuvenation emerged as a source of male fantasy and profit. I demonstrate the ways in which surgical and cosmetic rejuvenation treatments promoted to women by male physicians and advertisers reified particular standards of female appearance and conduct, incentivizing women to retain – or regain – their youthful vitality through restitutive acts of aesthetic transformation. Having sketched this discursive climate, I then turn my attention to literary fictions of female rejuvenation by women writers, and their film adaptations. Considered here collectively, these materials – which have received little critical attention to date – represent a hitherto-unacknowledged body of cultural forms which engaged imaginatively and substantively with conventional codes of female conduct and appearance across the life-course.

The double standard of ageing

"A man is as old as he feels, and a woman as old as she looks."[5]

Just over a century after this proverb was coined in an 1871 edition of the *Thames Journal*, the American critic Susan Sontag highlighted the continuing disparity in socio-cultural attitudes towards male and female ageing. "There is a double standard about aging that denounces women with special severity", she observed, adding that "Men are 'allowed' to age, without penalty, in several ways that women are not" (31). Her essay, published in 1972 in the *Saturday Review of Society*, scrutinized the intersectionality of sexism and ageism and emphasized the disadvantages women face within a value-system which judges their social worth primarily on their external appearance. "Being physically attractive counts for much more in a woman's life than in a man's, but beauty, identified, as it is for women, with youthfulness, does not stand up well to age", Sontag observed, adding that "for men there is no destiny equivalent to the humiliating condition of being an old maid, a spinster" (31, 32). Sontag's essay emerged from a particular socio-political climate – that of the women's liberation movement of the 1960s and 1970s – and as such, it represents a recognition of the need for feminist conversations on gender inequality in late-twentieth century societies. The double standard of ageing, Sontag argues, is a particular condition of "industrial societies":

> This revaluation of the life cycle in favour of the young brilliantly serves a secular society whose idols are ever-increasing industrial productivity and the unlimited cannibalization of nature. Such a society must create a new sense of the rhythms of life in order to incite people to buy more, to consume and to throw away faster. People let the direct awareness they have of their needs, of what really gives them pleasure, be overruled by commercialized *images* of happiness and personal well-being; and, in this imagery designed to stimulate ever more avid levels of consumption, the most popular metaphor for happiness is 'youth'. (I would insist that it is a metaphor, not a literal description. Youth is a metaphor for energy, restless mobility, appetite: for the state of 'wanting'") (31).

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[5] V. Lush, *Thames Journal*, 27 August 1871, p. 114, cited in *The Oxford Dictionary of Proverbs*, edited by Jennifer Speake, Oxford UP, 5th Ed., 2008, p. 199.

In Sontag's view, consumer culture both exploits and promotes a heightened awareness of the passage of time and the inexorability of ageing. Individual autonomy is subsumed by the powerful persuasive mechanisms of visual advertising which offer commercial solutions to enhance and prolong a fully energized mental and physical state for as long as the consumer continues to purchase them. And it is the female consumer who occupies a central subject position within this dynamic: "the esthetic standards for women are much higher, and narrower, than those proposed for men" (36), Sontag observes. Maintaining the "ideal image" of youthful femininity – a "slim figure, smooth firm skin, light musculature, graceful movements" – against the encroachment of age, is configured as a woman's moral and economic responsibility (35). In this context, consumerism is a means by which women strive to modify their bodies according to prevailing standards of youthful beauty.

The science of female rejuvenation

Sontag's perspectives on the idiosyncrasies of female ageing as a social and economic experience inform the key concerns of this final thesis chapter.[6] The correlation of ageing, gender and consumerism she explored in the 1970s was not unique to that period, but also operated across the late nineteenth and early twentieth centuries, where an emerging cult of youth amplified the expansion of rejuvenation in medical practice and commodity culture. Insofar as it has been told, the story of medical rejuvenation practices throughout these years has primarily been the story of *male* rejuvenation. Brown-Séquard's elixir contained testicular substances, and was administered to ageing men. Similarly, medical case studies and media reports on the rejuvenation treatments of Steinach, Voronoff and other "rejuvenators" usually told the story of male patients. Both the Steinach procedure and Voronoff's "monkey-gland" surgeries were tailored to the male anatomy in ways which precluded the same operation being applied to the female body. "The ovary has no duct of its own, the Fallopian tube, which conducts the ova to the uterus, not being in structural continuity with it" Steinach's supporter and proponent Norman Haire pointed out in 1923; "In the female, therefore, no autoplastic operation is possible" ("Recent Developments" 17). There is however, a history of medical rejuvenation for women

[6] Although it is acutely insightful in its observations about women's relationship to ageing, Sontag's essay does not invite broader consideration of the particular subjective challenges of male ageing which the previous chapter of this thesis gestures towards, including the devaluation of the ageing male whose physical capacity for work may be in decline and the question of moral distaste for active male sexuality in later life.

during the 1920s which currently exists only in piecemeal form, within a body of primary and secondary sources yet to be fully uncovered and interpreted.

In fact, developments in medical rejuvenation treatments tailored to the female body throughout the first quarter of the twentieth century generated distinctive interest. At this time, a new endocrinological understanding of the function of the ovary developed alongside scientific interest in the capacity of radioactive energy for cellular regeneration. This research intersected with contemporary gender ideologies and an emerging market in female-oriented consumerism in ways which shaped rejuvenation in both medicine and in the cultural imagination. Medical rejuvenation operated with an essentialist perspective on the character and social value of each sex: "physicians sought to rekindle…only those attributes of vitality that they considered to be culturally appropriate for the client's gender – efficiency and strength for men, beauty and sex appeal for women" (Sengoopta, *Most Secret* 93). The 1926 promotional publication *Modern Rejuvenation Methods*, by the American doctor Charles Evan Morris, embodied the logic of this approach. Outlining research into the endocrine system and coverage of rejuvenation in medical writing and the popular press in the early 1920s, Morris advised the reader that the "physical appearance of the individual" is linked to "the character and amount of the internal secretion" of the glands, which influenced the "general form and external appearance of the human body" (7). These included

> the length of our arms and legs, the shape of our nose, ears, teeth, the amount, texture and distribution of hair on our bodies, the quantity and location of our subcutaneous fat, the sound of the voice, the length of the fingers, shape of the nails, and all the other external characteristics of an individual" (7).

Morris postulated an interoperable network of glands in the body through which "every mark of our distinctive appearance finds its foundation" (42). This irresistible account of the potential of glandular rejuvenation treatments for cosmetic governance of the body appealed to individuals of both sexes. But Morris recognized its particular allure for women, who were held to specific social standards of physical appearance. Rejuvenation, he suggested, could also treat wrinkles: although "not a disease", he conceded, "so many people are interested in ridding themselves of this sign of old age that I mention it here" (214).

Morris devoted a number of chapters in his book not to rejuvenation through the ligation of the *vas deferens* practiced by Steinach, or the transplantation of glandular tissue from apes into the testicles, as advocated by Voronoff, but to a third method

promoted from the early 1920s onwards: rejuvenation by radium. Drawing on research into radium's capacity to reformulate the structure of cells, a number of physicians began to advocate the use of radioactive substances for therapeutic purposes during these years. Thomas de La Peña has argued that belief in radium's ability to "recast human energetic potential" was based in part in its conceptualization as an energy source with a long half-life, which seemed to challenge the second law of thermodynamics (173, 174). Contemporary discussions also drew on the associations between corporeal energies and electrical energies explored in Part I of this thesis. An article titled "Will Radium Restore Youth?" published in *Popular Science Monthly* in 1923 reported suggestions from some medical quarters that radium held the "'spark of life' – the mysterious electronic force that drives the life of the world". This substance was "constantly releasing mysterious energies" which, when "introduced to the human system", might, according to some experts, produce the "renewed vigor of youth". Bolstered by such coverage in periodicals and the popular press, radium treatments soared in popularity.

Thomas de La Peña suggests that "the advertising imagery and rhetoric" which promoted radium products in the first three decades of the twentieth century emphasized that "the bodies that might benefit from radium were primarily male" (181). Focusing her coverage primarily on the market in radium commodities, she does not extend her analysis to physician-administered radium practices.[7] In fact, these were very much a female terrain. Although he invested the most of his efforts in the male rejuvenation technique, Steinach also developed an alternative procedure for women involving radium. His collaborative experiments on female guinea pigs undertaken with the radiologist Guido Holzknecht in the early 1910s shared the same premise as his investigations into male rejuvenation, but were adjusted for anatomical difference. He hypothesized that low "stimulation doses" of radiation would destroy selected germinal cells of the ovary, resulting in the hypertrophy of the female "puberty-gland" (Corners 81). The reactivation of these localized sex glands would regenerate other glands in the body, leading in turn to the rejuvenation of the whole organism.[8] Reporting on the experiments in 1921, *The Evening World Daily Magazine* quoted the opinion of Dr. Lesser H. Groeschel, Director

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[7] See Thomas de la Peña, *The Body Electric*, Chapter 5: "'Radiomania' Limits the Energy Dream", pp.171-212.

[8] See Sengoopta *Most Secret*, p. 89. For the original source, see E. Steinach and G. Holzknecht, "Erhöhte Wirkungen der inneren Sekretion bei Hypertrophie der Pubertätsdrüsen", *AEM*, vol. 42, 1917, pp. 490-507.

of the New York Diagnostic Clinics and Roentgen Ray laboratory. Emphasising the re-energizing and nourishing potential of the treatment, Groeschel suggested that a woman "will probably need the stimulating rays just as a furnace needs fuel or the human body needs food" ("Perpetual Youth for Women"). Treatment by X-rays, the newspaper stated, could lead to clear complexions, brighter eyes and the disappearance of wrinkles. Women were advised to undergo irradiation by Steinach between the ages of forty and sixty, with the implication that the treatment would be most effective prior to, during, or shortly after the onset of menopause. "Eve cannot afford to wait so long for her rejuvenation as Adam", one popular text on the procedure warned, advising that whilst "men of seventy and over have been successfully Steinached…in women of so mature an age, the attempt would be almost hopeless" (Corners 82). Although the operation could not restore fertility, one doctor suggested that the boost it provided to the female reproductive system might even "enable weak mothers to nurse their babies" ("The Renewal of Youth").

The New York physician Harry Benjamin pushed Steinach to further explore female rejuvenation by x-ray (Sengoopta, *Most Secret* 90). He also administered the treatment himself to a number of women in their forties, fifties and sixties who had sought his help for fatigue and general senility, and, he claimed, had subsequently reported renewed activity, general vitality and a healthy appearance.[9] In his report on his female clinical case histories published in 1923, Benjamin repeatedly emphasized the same outcomes: after irradiation, his female patients, the majority of whom were post-menopausal, had "a distinct feeling of physical strength and energy" and "felt brighter and more energetic". Additionally, in three of the six cases, the favourable changes in appearance were so pronounced that the patient's friends and family remarked upon these visible signs of health ("The Steinach Method" 751-53). The success of this medical treatment, then, was measured according to social judgement as much as any clinical outcomes.

Benjamin's interest and enthusiasm in the application of the new Steinach technique to female patients notwithstanding, the number of women who actually underwent the Steinach procedure during this period is difficult to ascertain. The proliferation of surviving medical and cultural materials dealing with male patients suggests that the operation was still predominantly performed on men. The precise

[9] See case studies cited in Norman Haire, *Rejuvenation: The Work of Steinach, Voronoff, and Others*, G. Allen and Unwin, 1924, pp. 198-204.

reasons for this imbalance are unclear, though concerns about the risk of damage through incorrect dosages of radium which had the power to completely destroy the ovaries may have played a part.[10] Equally, the prevailing gender ideology may have dictated that the restoration of physical energies was less important for women than for men, who still made up the majority proportion of the workforce. Yet, the transformative possibilities medical rejuvenation presented for older women marginalized by prevailing male fantasies of youthful femininity animated the collective imagination in ways which male rejuvenation did not. Given the social standards of physical self-presentation to which women were held, Steinach and Benjamin's clinical reports on female rejuvenation – filtered through newspaper reports and popular science publications designed for the general reader – offered rich material for literary and filmic exploration, and for consumerist practices.

Women and consumerism

From the 1860s onwards, retail competition "produced a new way of thinking about consumption, the city and female pleasure" (Rappaport, "A New Era" 130). This new consumerism capitalized on the negative discourses of female ageing facilitated by the medical perspectives on menopause and by broader socio-cultural attitudes towards older women. From the closing decade of the twentieth century onwards, women of all ages became the target market for mass-scale gendered advertising which both reflected and reified a youthful appearance as the index of a woman's social value. These forms of advertising were almost exclusively created by men. As Lori Loeb has emphasized, "male [advertising] agents paid attention to the demonstrable characteristics of a predominantly female market, but, unconsciously or not, they inevitably incorporated their masculine biases and preconceptions into their advertisements" (*Consuming Angels* viii). This new market carved out a distinct socio-economic identity for the female consumer. With the rise in female employment across various industries and other relevant social, economic and political changes across the first quarter of the twentieth century, increasing numbers

[10] Steinach's colleague and supporter Paul Kammerer warned that the over-application of radium during the procedure could have the opposite effect to that intended, so that "instead of a rejuvenating result, an acceleration of the process of aging would ensue". See Kammerer and Steinach, *Rejuvenation and the Prolongation of Human Efficiency*, p. 123.

of women were accorded new roles in the market economy as salaried workers with disposable income, and purchasing power.[11]

In 1910, Edward T. Devine, professor of Social Economy at Columbia University, published an article which examined the position of women in contemporary industrial society. "The Economics of Woman" dealt with "the economic importance attached to woman's work in the home", but in so doing, it offered a definition of a woman's social and economic function which extended from the domestic realm to encompass new public spaces – and acts – of expenditure. The political economy, Devine observed, was beginning to shift its interest towards consumption as gendered practice. "If it falls generally to man chiefly to direct the general course of production", he reasoned, "consumption is the field which belongs pre-eminently to woman" (9). Since supply is led by demand, women's choices, he suggested, were now centrally important to "general prosperity" (10). The present "duty" of the economist, he concluded, must therefore be "to magnify the office of the wealth expender, to accompany her to the very threshold of the home that he may point out, with untiring vigilance, its woeful defects, its emptiness caused not so much by lack of income as by lack of knowledge of how to spend wisely" (14-15). The encroaching logic and practices of this male-orchestrated consumerism upon the personal and social identity of the female subject, tapping her aspirations and her desires, reinforced a prevailing gender ideology which configured women's youthful health and beauty as corporeal enterprises: projects of self-improvement for which they were now financially, as well as morally, responsible.[12]

Fin-de-siècle fictions of female rejuvenation

Two fictional stories by female writers from the *fin de siècle* bear the traces of the medical, commercial and social discourses of rejuvenation outlined in this chapter so far as they manifested at the turn of the century. In his 1887 short story "The Man Who Grew Young Again", writer Robert Duncan Milne had created a tale of male rejuvenation by blood transfusion which integrated the mythical and humoral understanding of blood as

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[11] On the growth of female employment in the US, see Alice Kessler-Harris, *Out to Work: A History of Wage-Earning Women in the US*, Oxford UP, 2003. For a British history, see Gerry Holloway, *Women and Work in Britain since 1840*, Routledge, 2005, pp. 53-161.

[12] For a fuller survey of the theoretical terrain of contemporary consumer culture and its implication for women's issues, see Celia Lury, *Consumer Culture*, Rutgers UP, 1996, pp. 118-55. Lury suggests that women occupy a "paradoxical position" as both "subject *and* object of consumption practices" (p. 155) and calls for analysis of consumer culture which pays particular attention to its gendered dimensions.

"life-fluid" with new scientific perspectives on its physiological function (discussed in Chapter Five of this thesis). Milne, however, was not the only writer in the closing years of the nineteenth century to be drawn to blood for its potential to regenerate the senescent body. In 1896 – the year before Bram Stoker published *Dracula* – a new short story by the English popular novelist Mary Elizabeth Braddon titled "Good Lady Ducayne" appeared in the February edition of *The Strand Magazine*.[13] Largely overshadowed by critical discussions of Braddon's sensation fiction, the story has recently begun to attract more interest.[14] Analyzed here in the context of the medical and commercial discourses of female rejuvenation explored so far in this chapter, and in relation to Milne's story from the previous decade, "Good Lady Ducayne" emerges as a text expressive of contemporary discourses surrounding class, gender and the medical transformation of the female body as a commercial practice.

The story's protagonist is 18 year-old Bella Rolleston, a young woman seeking employment to support herself and her mother. An agency eventually places her as the hired companion to the older aristocratic Lady Ducayne. After travelling to the Italian Riveria with Lady Ducayne and a mysterious figure named Dr Parravicini, Bella's health begins to deteriorate. Once "ruddy and robust", she grows increasingly "white and weak" and finds herself unable to undertake daily activities with her former vigour (196). Noticing these changes, a young doctor of Bella's acquaintance named Herbert Stafford arranges a meeting with Lady Ducayne. The older woman presses him on his knowledge of "progressive science", asking whether he knows of "any elixir – any mode of treatment" to "prolong human life" (197). Finally, she reveals that Dr Parravicini is her private physician and that she has been paying him thousands of pounds to provide her with treatments which may restore her youthful appearance and vitality. Stafford deduces from lancet marks on Bella's arms that Parravicini has been draining the young girl's blood under sedation and transferring the substance to Lady Duyacne as an "experimental

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[13] Founded in 1891, *The Strand Magazine* was one of a group of general-interest family magazines which, at sixpence, made it half the cost of other magazines and affordable to a wider demographic including lower-middle-class and working-class readers. See Michael Ashley, *The Age of the Storytellers: British Popular Fiction Magazines 1880-1950*, Oak Knoll Press, 2006, pp. 1, 11, 196-97.

[14] For the most extensive existing critical discussions of the story, see Tomaiuolo's "Reading Between the (Blood)lines of Victorian Vampires: *Good Lady Ducayne*" in *In Lady Audley's Shadow: Mary Elizabeth Braddon and Victorian Literary Genres*, Oxford UP, 2010, pp. 60-76 and Lauren Goodlad, "'Go and Marry Your Doctor': Fetishism and 'Redundance' at the Fin de Siècle and the Vampires of *Good Lady Ducayne*" in *Beyond Sensation: Mary Elizabeth Braddon in Context*, edited by Marlene Tromp et al., SUNY Press, 2000, pp. 211-34. These articles explore the story's configurations of class, gender and race but without a distinctive emphasis on female rejuvenation.

surgery" in rejuvenation (198). The truth finally emerges that Lady Ducayne is in fact over 100 years old, her rejuvenation facilitated by two of her unwitting former female companions, who had previously been bled to death in order to sustain her appetite for prolonged life. The story ends somewhat unexpectedly with Lady Ducayne bestowing a parting gift of a thousand pounds to Bella, together with instructions to invest the money in debenture stock. The older woman finally commands the young girl to marry the young doctor who has saved her.

Braddon took inspiration for the character of Lady Ducayne in part from the history of the sixteenth-century Hungarian Countess Elizabeth Bathory, whose attempts to rejuvenate herself in the blood of young women earned her the popular title "Blood Countess of Cachtice".[15] However, Braddon's updated narrative of female vampirism is very much situated within the gender politics and market conditions of the 1890s, and interrogates the relationship between the two adroitly. It also draws on a conceptual model of female youth as a finite form of energy that cannot be expanded but only redeployed between bodies. Bella and Lady Ducayne are each embedded within a consumerist circuit oriented by youthful energy. Lady Ducayne's corporeal deficiency is offset by her abundant aristocratic wealth. She is an avid consumer in the medical marketplace, driven by a desire for a rejuvenation which will restore the vigour of her youth and further facilitate her long life of material luxury. Meanwhile, the upwardly-mobile Bella seeks a "situation and a salary" to "earn her bread" and support her mother financially (185). Lacking pecuniary means, Bella nonetheless possesses abundant physical capital. She is a female consumer-in-waiting, stirred to life by the lure of commodity display; "The Walworth Road shops gleamed brightly through that grey atmosphere, and though to a young lady reared in Mayfair or Belgravia such shop-windows would have been unworthy of a glance, they were a snare and a temptation for Bella. There were so many things that she longed for, and would never be able to buy" (187).

Bella's energy capital as a young woman becomes the means by which she seeks to augment her own purchasing power. That the age difference between the two women is the primary framework within which their transactional exchange operates is underscored by the descriptive terms applied to each woman during their first encounter. Lady Ducayne is "a withered, old face under a plumed bonnet – a face so wasted by age

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[15] See Tomaiuolo, "Reading Between the (Blood)lines", p. 62. Tomaiuolo also cites earlier vampire stories as sources and influences, such as Sheridan Le Fanu's *Carmilla*, serialized in *The Dark Blue*, December 1871-April 1872. The history and legend of Elizabeth Bathory is covered in Raymond T. McNally, *Dracula Was a Woman: In Search of the Blood Countess of Transylvania*, McGraw-Hill, 1983.

that it seemed only a pair of eyes and a peaked chin". Meanwhile, Bella is "fresh, blooming, a living image of youth and hope" (187). Lady Ducayne's direct enquiries about Bella's suitability converge on the younger woman's physical energy: her vivacity, vigour and regenerative capacity; "'Have you good health? Are you strong and active, able to eat well, sleep well, walk well, able to enjoy all that there is good in life?'" (188). Bella's assurance that she is neither "ill" nor "idle" consolidates her commodification: she will unwittingly trade her blood – the material embodiment of youthful energy – in exchange for a yearly salary and a life of luxury on the Italian coast.

Braddon's tale expresses the economic dimensions of ageing womanhood within the expanding landscape of consumer culture with acuity. But in the final instance, it also reinscribes the conventional gender ideology. Bella's marriage to Herbert Stafford may represent a more proportional return on her youthful energy, but her former economic and medical attachments are simply replaced by a new romantic, value-seeking relationship. Meanwhile, with her exploitative rejuvenatory practices exposed, Lady Ducayne reconciles herself to the negative value of her physical capital and abandons her efforts to recover youthful female sexuality via medico-commercial enterprise. Her gift of £1,000 to Bella is a renunciation of her long-standing rejuvenatory desire: through it the tenacious old maid makes her symbolic concession to the celebrated action of institutionalized youthful coupling.

This ultimate capitulation of the rejuvenation-seeking older woman stands in stark contrast to the fate of Wycherly, the elderly male protagonist who regenerates via the same process of blood transfusion in Robert Duncan Milne's "The Man Who Grew Young Again". Milne's story of male rejuvenation eschews moral dimensions and leaves its protagonist's physical appearance and function transformed, facilitating his marriage to his son's former fiancé. Yet, where Milne's fantasy of male resexualization through blood transfusion succeeds and leaves the rejuvenated man to live out his condition of renewed youth, Braddon's configuration of female rejuvenatory desire as a form of profiteering vampirism testifies to the enduring sense that for women, "aging is much more a social judgement than a biological eventuality" (Sontag 32). The only seemly ending possible for the story told by "Good Lady Ducayne" is one in which the sexual value of young woman is celebrated, and the sensual aspirations of the elderly woman yield to the superior value of authentic youth.

The new woman?: *The Second Youth of Theodora Desanges*

The issue of moral judgement arising from a woman's desire to restore her youthful appearance and vitality was a recurring one for writers who explored the imaginative possibilities of female rejuvenation. The English journalist and popular novelist Eliza Lynn Linton navigated the issue by eschewing the representation of any medical or commercial practice as the means by which the fictional protagonist of her novel achieves rejuvenation. Linton was in her seventies when she wrote *The Second Youth of Theodora Desanges*, and it was published posthumously the year after her death, in 1899. The "Theodora" of the novel's title is its first person narrator, a widow who, in the opening pages, offers an account of her own rejuvenatory experience. She begins with an assessment of her formerly abundant corporeal energy throughout her youth and middle life. Heretofore one of life's "most fully vitalised beings", in her early sixties, she had met with "the sluggish rivulet of old age" which led to declining health, willpower and a nervous condition (3). The possibility of reclaiming her youthful state represents, to her, the ideal synthesis of emotional maturity and outer charm: "the union of sympathy with knowledge, of personal attraction with moral weight" (4).

Linton's novel was published in the same year as Jack London's short story "The Rejuvenation of Major Rathbone" (see pp. 150-53 of this thesis). Yet, the material conditions of Theodora's rejuvenation and those of Major Rathbone's are very different. Where Jack London drew directly on Brown-Séquard's experiments with internal secretions as the medical context for his story of an old man's physical and sexual re-energization, Linton invoked a more general sense of the imaginative possibilities facilitated by new scientific and technological advances in framing her tale of an elderly woman's rejuvenation. The novel opens with an invitation to the reader to willingly suspend disbelief in approaching Theodora's metamorphoses:

> With the spectroscope and the phonograph, the germinative force of formic acid, the liquefaction of air, the Röntgen rays, and the new telegraphy, how can we say that any marvel in molecular arrangement is impossible? We have not come to the dry land nor touched bottom yet, nor exhausted the possibilities of transposition and transference" (1).

The story invokes no further causality for Theodora's rejuvenation than this general optimism in the possibilities of scientific progress. Following a period of serious illness, Theodora experiences a "strange reflux of vitality" (5) and unprompted by any medical or commercial interventions, she is rejuvenated. That her transformation is unexplained

but apparently organic – and unsolicited – neatly exonerates both Linton and her fictional protagonist from potential charges of vanity and immorality. Sidestepping the particular details of female rejuvenation, and the question of agency in particular, licences the fantasy of second youth in the subsequent pages of the novel.

In her widely-circulated 1868 essay for the *Saturday Review* titled "The Girl of the Period", Linton had denounced what she deemed to be the frivolous concerns of young women with fashion and cosmetics.[16] The protagonist of her final novel initially follows suit, eschewing the commodities of rejuvenation available to ageing women in her refusal "to repair myself, as some do, with false hair and paint, a pinched waist and a fashionable suit" (3). Yet, this professed anti-consumerism belies an implicit optimism in the personal and social liberation that rejuvenatory practices might afford for the older woman. Signifiers of Theodora's rejuvenation read like a catalogue of promises from contemporary advertising catalogues: she loses her "thin and scanty" grey hair and "a crop of soft, young, bright-brown curls" grows in its place. New teeth, "perfect, white and well-shaped", make her artificial set redundant. This is accompanied by changes to her "face, flesh and figure", as her waist shrinks from "matronly proportions of some thirty-six inches" to a twenty-two-inch circumference, and her skin, formerly "flaccid and wrinkled", becomes "firm and smooth" (5).

Theodora's "marvellous rejuvenescence" generates widespread medical and media interest, and her transmutation from "the backwater of a frail and unpersonable old age" to "the very apex of desirable womanhood" facilitates a corresponding social restoration (7, 8). Returning to the circuit of evening entertainments, she becomes a "celebrity" (18). At one event, she catches sight of her reflection in a drawing-room mirror and muses on the personal and social empowerment it has afforded her. At this moment, she feels that her embodiment of ideal youthful femininity offers access to a level of authority that is more commonly the reserve of the patriarchal hegemony: "It seemed to me as if I had in my hands the destinies of empires and the threads of all human life; as if I were commissioned to rule the rulers and influence the course of history" (12). This ambition is supplemented by her knowledge of key political events from history which she has gained first hand throughout her exceptionally long life: "the assassination of Perceval…Trafalgar, 'Peterloo', the first railway…" (15). Later in the novel, she uses

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[16] *The Saturday Review*, vol. 25, (London), 14 March 1868, pp. 339-40. The essay enjoyed an afterlife beyond its initial publication moment in the 1860s and was republished in 1883 in a new volume titled *The Girl of the Period and Other Social Essays* (Richard Bentley and Son, 1883). All quotations here are from this volume.

her unique combination of youthful appeal and the wisdom of experience to exert influence over young male politicians –"whose ideas would soon be predominant and whose hands would soon take the reins" (241) – as a means of entrenching her own conservative, imperialist and antifeminist values on a broader scale. However, her experience is increasingly one of wholesale alienation. Although she elicits the admiration of men and inspires envy in women, her youthful behaviour is deemed socially transgressive for a nominally older woman and she is excluded from meaningful relationships with friends. A brief encounter with the grandson of a suitor from her youth arouses only fleeting sexual feeling: she remains otherwise indifferent to expressions of romantic interest and offers of marriage. Struggling to reconcile her experience of "gratified vanity" with instances of "rasping humiliation" (38, 39), Theodora finds herself "without passions, enthusiasms, hopes, affections – without companionship" (253). She finally leaves England for a life of obscurity abroad, "young in physical power" and "gifted with knowledge", but, "the incarnation of Satiety and Fatigue" (334).

Linton's story is a complex fabric of unresolved contradictions, with a narrative voice that is at times irascible and self-righteous and at others, acutely perspicacious in its engagement with the myriad difficulties of late-life womanhood. In her 2013 article "The Unnatural Youth of the Old 'New Woman'", literary critic Teresa Mangum identifies the book as an example of a new type of fiction which emerged around the turn of the century within the literary "New Woman" genre. As defined by Kathy Peiss, "in popular culture, the emergent ideal of the 'New Woman' imbued women's activity in the public domain with a new sense of female self, a woman who was independent, athletic, sexual and modern" (7). The New Woman was not overdetermined by previously established and consolidated gender codes, but demanded enfranchisement and access to education and employment. Against this backdrop, Mangum argues, the "literary rejuvenescence plot" registered "powerful tensions during the late century between, on the one hand, an eagerness for those ideas (and bodies) that represent 'the new', progress, and evolution, and, on the other hand, the perceived economic and social threats of 'the old', entropy, and devolution" ("Unnatural Youth" 75, 76).

Mangum's observation usefully contextualizes some of the particular irresolutions of Linton's novel. Theodora's rejuvenated condition becomes a liminal state, expressive of *fin-de-siècle* ambivalence. Although it facilitates self-admiration and improved functionality, her restored physical allure does not lead to meaningful romantic relationships or personal friendships. Similarly, though she is returned to the condition of

youth, she nonetheless finds herself at odds with the figure of the New Woman embodied in her acquaintance May Listerton, whom she derides as "restless and dissatisfied, fond of pleasure and admiration, pretty and vain and fascinating" but with "no depth" (174). At the close of the novel, many years have passed since the events recounted, and Theodora has retained both her rejuvenated physical state and her general disillusionment. As a politically and socially conservative older woman in a younger woman's body, she finds herself "at cross corners with modern thoughts and ways" (327). Having unsuccessfully sought to use her feminine wiles to stem the progressive agendas of liberalism and women's rights, she finally resigns herself to a philosophical acceptance of appropriate life-phases, concluding that "my strange experience has taught me that things are better ordered for us than we could order them for ourselves. Life is sweet for its brief day, for the morning and the noon and the evening, and while its freshness is unexhausted either in fact or memory" (335). In Jack London's "The Rejuvenation of Major Rathbone", the renewed political, social and sexual appetites of the rejuvenated ageing man are finally contained within marriage. In *The Second Youth of Theodora Desanges* – as in "Good Lady Ducayne" – with these same appetites curbed, the rejuvenated elderly woman faces no such consolation. Definitively desexualized and ostracized, she resigns herself to irrelevance and obscurity.

Rejuvenation fictions, cinema and consumerism in the 1920s

Two decades later, literary fiction continued to explore the rejuvenated woman's social, moral and economic agencies and limitations, its interest redoubled by the medical possibilities raised by Steinach and Voronoff. So too, did cinema. By the 1920s, cinema's enthusiasm for the rejuvenation theme, first realised in Méliès' 1899 film *La Colonne de Feu*, extended across both the fiction and non-fiction genres. In 1923, a scientific film documenting laboratory rejuvenation experiments on rats and humans and designed specifically for a lay audience was screened across Europe, and proved hugely popular. Crowds clamoured to get into a Viennese movie house showing the results of the Steinach procedure on rats and men, with an accompanying lecture ("Gland Treatment Spreads"). The same film also played to packed theatres in Berlin ("Rejuvenation Film") and had screenings in London, but US authorities prohibited its general exhibition on moral grounds (Haire, *Rejuvenation* 12). Although these non-fiction films documented male rejuvenation treatments and not the lesser-performed female procedure, the prospect of viewing rejuvenation on screen appealed to both male and female spectators alike. In Paris, a crowd of hundreds – almost half of whom were young girls and women – vied

for entry to the Collège de France to see a film about the transference of monkey glands to human subjects, which featured "before" and "after" images of rejuvenated male patients. The *Chicago Daily Tribune* reported a "near riot" outside the movie theatre and a "lively" audience once inside, noting that "One woman became so thrilled at Dr. Voronoff's description of 'virile impulses' that she jumped up and shouted 'When are you going to do something like that for us women?'. The film then played to a hushed audience, who afterwards responded with "applause and stamping of feet" (Gibbons).[17]

The creative choices of American feature film producers at this time also testify to cinema's continuing appetite for the visual spectacle of female rejuvenation. The early 1920s saw the release of two film adaptations of female rejuvenation novels, both of which drew on medical and cultural dialogue surrounding youth, age and intergenerational relations as it had evolved since the *fin-de-siècle* moment of Braddon and Linton's fictions. *Black Oxen*, released by Frank Lloyd Productions in 1923, based on Gertrude Atherton's bestselling novel of the same name. Atherton's book tells the story of Mary Zattiany, an American widow previously married to a Hungarian count, who returns to America to settle her business affairs. There, she introduces herself as Mary Ogden, and her combination of youthful beauty and cultivated poise attracts the romantic interest of a young writer named Lee Clavering. Part-way through the novel, Mary's secret is revealed: she is in fact 58 years old, and the Steinach treatment has given her the youthful appearance of a woman in her twenties. In her sixties at the time of writing, Atherton framed the novel publicly as the fruit of a creative renaissance sparked by her own rejuvenation surgery, performed by the New York Steinach advocate Harry Benjamin.[18]

The book charts the experience of an older woman living "in the age of youth" with a particular interest in the disjuncture between the physiological and psychological experiences of female ageing, as Mary seeks to reconcile her newly-restored romantic girlishness with her mature interest in the reconstruction of post-war Europe. Atherton's

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[17] The film was screened in London the following year. See "Voronoff and Steinach", *Time*, 30 July 1923, pp. 19-20.

[18] In her autobiography *Adventures of Novelist* (Cape, 1932), Atherton recalled having read an interview with Benjamin in the newspaper, which described the clamour of interest from women all over Europe for the new rejuvenation treatment. Benjamin diagnosed Atherton with hormonal depletion of the pituitary thyroid gland, and administered eight sessions of X-ray treatment to the writer, which she claimed reanimated her physical energy and creative faculties. Benjamin also advised on the manuscript's development (see pp. 535-44).

novel was a bestseller. Published in January 1923, it sold 100,000 copies in the first year of publication, and earned Atherton more than $30,000 in royalties in just 12 months (M. Dawson 37, 38). In 1928, *The New York Times* named it the ninth bestselling book of the decade ("Calls 'Main Street' Best Seller"). More recently, the novel has attracted increasing critical interest, a trend reflected and consolidated by the publication of a new critical edition by Broadview Press in 2012. Elsewhere, Julie Prebel has explored the ways in which the novel, as a text incorporating both literary conventions and contemporary science, "demonstrably influenced cultural attitudes in the United States about scientific intervention in the enhancement and prolongation of human life" (308).[19] In addition, Anne Morey has contributed a comparative study of the novel and its 1923 film adaptation, an incomplete copy of which survives in the archive of the Eastman Museum in Rochester, N.Y. Morey's essay situates the film within the context of the genre of "flapper" features from the period, and examines the ways in which both the novel and the film navigate questions of mature sexuality, female agency and intergenerational conflict.

Bearing in mind these existing analyses of *Black Oxen*, in the final section of this chapter I consider a second rejuvenation novel from the same period and its film adaption: the 1918 story *The Young Diana* by the British popular fiction writer Marie Corelli, and the 1922 film of the same name by the New York company Cosmopolitan Productions. Contrary to renewed interest in *Black Oxen*, literary discussions of Corelli's novel are currently limited to brief references and descriptive paragraphs in studies of the writer's life and work (Ransom; Federico; Hallim). No surviving print of the 1922 film adaptation has been identified: I therefore present an interpretation of the film adaptation based on surviving archival materials, including film stills, trade journals and fan magazines.[20] Combining close-readings of the novel with institutional analysis of the film's exhibition, I present *The Young Diana* as a case study in the interrelated practices of popular science, autobiographical fiction-making, cinematic appropriation and consumer culture, collectively mobilized by the concept of female rejuvenation.

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[19] Readings of the novel also feature in Susan Squier, "Incubabies and Rejuvenates: The Traffic Between Technologies of Reproduction and Age-Extension in *Figuring Age: Women, Bodies, Generations*, edited by Kathleen Woodward, Indiana UP, 1999, pp. 88-111 and in Dale Bauer, "Refusing Middle Age", *ANQ*, vol. 15, no. 1, Winter 2002, pp. 46-60.

[20] A short entry on the film in *American Silent Horror, Science Fiction and Fantasy Feature Films, Vol. II: 1913-1929*, edited by John T. Soister and Henry Nicolella draws on contemporary sources to provide a useful overview of the film but does not offer substantive analysis (see pp. 674-76).

The Young Diana

Between February and August 1918, the American monthly *Hearst's Magazine* serialized *The Young Diana*, the latest novel by the British novelist Marie Corelli. Soon afterwards, the book was published simultaneously in London and New York.[21] Corelli's career as a popular fiction writer had begun with the publication of her first novel in 1886. In Britain, her books sold more copies than the combined sales of her popular contemporaries, including Arthur Conan Doyle, H.G. Wells, and Rudyard Kipling, and she also enjoyed considerable success in America, where the state of Colorado named one of its cities after her (MacLeod 9; Ransom 7). *The Young Diana* tells the story of Diana May, an ageing spinster who, at the beginning of the novel, is living at a suburban London home with her respectable, retired, middle-class parents. Her domestic situation is the outcome of a broken engagement to a naval officer named Reginald Cleeve some years earlier, a rejection that, it is implied, was based upon his belief that she had grown too old for him to marry during his seven-year posting in India. Socially alienated and a disappointment to her parents on account of her spinsterhood, Diana responds to an advertisement from a European scientist for an educated woman "of mature years" with knowledge of modern science to participate in a new two-year experiment of potential benefit to the human race (34-5). In order to escape the confines of her life as an old maid and domestic accessory, Diana stages her death, leading her parents to believe she has drowned at sea, and enters the employment of the scientist Dr Dimitirus. Dimitrius uses a new experimental method to rejuvenate Diana's youth and beauty, and she enjoys a life of renewed physical splendour and social attention. In the final pages of the novel, the tale is revealed to be Diana's dream: a plot device that echoes the premise of Pathé's 1901 film *Rêve et Réalité*. However, where Pathé's film charted the disappointment of the aged man's rejuvenatory expectations, here, the dream frame functions as a wry acknowledgement that the fulfilment of the older woman's rejuvenatory desire is finally the stuff of fantasy, not reality.

Corelli's novel engages with several important aspects of female rejuvenation as both concept and practice identified in this thesis chapter so far. Like Linton's *The Second Youth of Theodora Desanges*, which was published into a climate of debate surrounding the New Woman, *The Young Diana* presented a rejuvenated female protagonist at a particular transitional moment in ideological formations of gender. Published in the

[21] All subsequent references in this chapter to the novel are to the New York edition published by George H. Doran Company, 1918.

months after the end of the First World War, Corelli's novel registered and responded to the renegotiation of women's social value within the domestic sphere, and their expanding social, economic and political identities. Thus, on the one hand, the book is a conventional romance narrative, in which a stereotypically embittered spinster uses her restored beauty to relive her lost youth, and to seek revenge on her former suitor. When looking for a means of escape from her domestic confinement, for example, Diana dismisses an invitation from a suffragette acquaintance to strike out on her own, remaining beholden to "the 'Duty' fetish" (47) which precludes this particular form of self-liberation. On the other hand, *The Young Diana* articulates a vehement protest against a double standard of ageing which reserves a particular loathing for the middle-aged woman no longer in her physical prime. In the eyes of potential suitors, Diana, as a single woman in her early forties, fits the profile of an old maid, "a term of depreciation still freely used by the golden youth of the day" she notes, "despite the modern and more civil term of 'lady bachelor'" (15). Corelli levels a sharp critique at such attitudes through Diana's internalized self-criticism ("nothing withered or ugly ought to live in such a lovely world. I am a blot on beauty" 24), and her observation that "Women especially are sneered at for age, as if it were a crime to live beyond one's teens" (159).

Diana's means of escape throws her from the ageist whim of her former suitor and the sexist hypocrisy of her elderly father, into the hands of male medical authority. She enters the employment of Dr Dimitrius as an experimental subject, and his scientific success is contingent on her own self-disregard. Reasoning that an advertisement for a woman of mature years would find success primarily because he judged such a woman to be "of no particular use to anybody" (186), Dimitrus seeks authorship and ownership of Diana's transformation throughout. He is the quintessential pseudoscientist who, "for years and years, ever since his early boyhood… had devoted himself to the indefatigable study of such arts and sciences as are even now regarded as only 'possible' but 'not-proven'" (186). His micro-objective is one of corporeal re-energization through cellular renewal: "youth is in the cells of the brain", he remarks; "should the cells become dry and withered, it is because the soul has ceased to charge them with its energy. But when this is the case, it is possible…for science to step in. The spark can be re-energized – the cells can be re-charged" (161). This specific practice feeds a broader ambition to "revivify and regenerate the human race": one achieved not, it is worth noting, through the reactivation of female reproductive capacity (his rejuvenation treatment destroys fertility), but through a pseudoscience characterized by male ego and sexual desire (260). Like the blood transfusions which renew Lady Ducayne in Braddon's earlier short story, the means by

which Diana's rejuvenation is achieved are part-medical and part-mythical. An elixir of "liquid fire" taken daily for a fortnight imparts "vital freshness and elasticity" (176, 177), after which Diana is immersed in a bath of radium water for four days. Her rejuvenation is thus conceived as a fantasy of immateriality which is at the same time intensely corporeal. Assuming the goddess-like qualities of her namesake, she is "almost aerial", "a sculptured angel" and the artistic embodiment of a "sexless beauty" which is primarily aesthetic, rather than functional (271, 272, 276). At the same time, her new state is a distinctly embodied one, carrying the socially-sanctioned characteristics of successful femininity: she gains "a supple, swaying grace of movement which was new and attractive" (190) and reacquires "a fair, unworn face, with the softly rounded outline of youth" (244).

The novel's fascination with the prospect of cosmetic transformation through medical methods of rejuvenation (chemical elixir, irradiation) is supplemented by its corresponding interest in the capacity of consumer culture to achieve such an outcome. In the book's opening pages, the third-person narrator of Diana's story articulates a subject position for woman as a commodity. "Woman, considered in the rough abstract, is only the pack-mule of man, – his goods, his chattels, created specially to be the 'vessel' of his passion and humour", Corelli writes, "and without his favour and support she is by universal consent set down as a lonely and wandering mistake". Within this gendered economy, Diana, as a "rapidly aging spinster", is surplus: "No man sought to add her person to his goods and chattels" (13). "Withdrawn from the matrimonial market for lack of bidders" (96), she describes herself as "a valueless commodity" (212).

Female agency is configured in terms of consumer choice. Diana's medical rejuvenation is preceded by a commercial one: celebrating her new-found freedom from domestic duty following her staged death, she sets out for Bond Street with a friend to explore "the mysteries of the newest Aladdin's palace of elegant garments" (96). Such accoutrements become the embodied signifiers of her commodity-led metamorphosis from old maid to a "new and aspiring" version of herself (102). Accordingly, Diana's subsequent medical rejuvenation treatment not only restores her youthful appearance, but also activates new consumerist desires associated with this aesthetic state. Keenly anticipating a forthcoming trip to Switzerland organized by Dr Dimitrius, she is desirous of a new outfit for the event ("A pleasant vision of rich, royal blue cloth trimmed with dark fur flitted before her" 183). Following her final transformation and dismissal from Dr Dimitrius' service, Diana becomes a celebrity, and a consumer icon. No longer an old

maid of the kind whose visual likeness defied the very mechanisms of image capture in short films of the 1890s and early 1900s (see pp. 135-38 of this thesis), she is "besieged" by "photographers, cinema-producers, dressmakers, tailors, jewellers" (348).

Corelli's own experience in an age of literary celebrity conceivably informed this account of Diana's newfound fame. As a popular writer, Corelli operated within a market in which "images of popular authors in photographs, frontispieces, postcards and portraits sold books for publishers, and authors were expected to cooperate in the commodification of their faces, bodies, pets, houses and favourite haunts" (Federico 21). This culture of visual critique, and its particular implications for the woman writer, are colourfully exemplified by Mark Twain's autobiographical account of his encounter with Corelli at a luncheon in 1907:

> She is about fifty years old but has no gray hairs; she is fat and shapeless; she has a gross animal face; she dresses for sixteen and awkwardly and unsuccessfully and pathetically imitates the innocent graces and witcheries of that dearest and sweetest of all ages; and so her exterior matches her interior and harmonizes with it, with the result – as I think – that she is the most offensive sham, inside and out, that misrepresents and satirizes the human race today. (Twain 99)

Twain's diatribe emphasizes a perceived disjuncture between Corelli's biological age (and its physical signifiers), and her efforts at self-presentation. Her apparent attempt to rejuvenate herself through dress is configured not just as an ignoble form of imitation, but as a deceptive practice which mocks and insults the "innocent graces" of youthful femininity. Ultimately, he suggests, this external dissimulation is an accurate indication of her internal character.

Corelli's efforts to manage media appropriation of her physical appearance throughout her career suggest the extent to which she was herself caught up in the discourses of sexism and ageism she explores in *The Young Diana*. In an author's note published in her 1906 novel *The Treasure of Heaven*, Corelli addressed interest in her public image, together with surrounding questions of authenticity and commercialization, explicitly. "No portraits resembling me in any way are published anywhere", she advised. Re-expressing her objection to a cult of "picture popularity", she sought to refocus public attention on her work as a more accurate indication of her "real being" than "any portrayed presentment of mere physiognomy" (viii, vi). At the same time, she insisted

that the new frontispiece portrait in the book taken "by the special request of the Publishers" did, in fact, represent her "faithful likeness" (vi, see fig.6.4)

Fig. 6.4 Frontispiece portrait of Marie Corelli taken in Spring 1906 by G. Gabell, published in Marie Corelli, *The Treasure of Heaven: A Romance of Riches*, 1911.

In fact, the photograph had been heavily doctored at Corelli's request: under her instructions, her waist was reduced, her hair lightened and lines removed from her face (Ransom 149).[22] Her desire to take ownership of her physical representation is further underscored by the prominence of the copyright note below the portrait attributing its ownership to the writer herself. Corelli's attempts to wrest control of her image from a media circus increasingly fixated on the female form indicate the distinct pressures she faced as a woman growing old in full public view.

[22] For an overview of Corelli's relationship with her public image, see Annette R. Federico, *Idol of Suburbia: Marie Corelli and Late-Victorian Literary Culture*, University Press of Virginia, 2000, pp. 14-52 and Teresa Ransom, *The Mysterious Miss Marie Corelli: Queen of Victorian Bestsellers*, Sutton Publishing, 1999, pp. 146-49.

The Young Diana on film

By the 1920s, an increase in post-war production in the US was powering an expanding market in consumer goods. This burgeoning industry necessitated a buying public: "excessiveness replaced thrift as a social value" and "the psychic desire to consume" became integral to national economic interest (Ewen 25). Within this changing economic landscape, rejuvenating health, beauty and fashion products targeting the female consumer intersected with the evolving institutions of popular culture. Cinema represented one of the most conspicuous and lively examples of this juncture. Motion pictures constituted an aesthetic realm which embraced and amplified consumerism's culture of visual spectacle. Silent film foregrounded the language of the body and the gestures and movements of its female screen stars began to reify and expand conventional standards of physical behaviour and appearance. Furthermore, as a visual medium with a broad reach, it "produced, distributed and exhibited millions of images of the body", and "allowed standards of appearance to be disseminated on a mass scale" (Addison, 10, 9). New film "fan" magazines released towards the end of the first decade of the twentieth century such as *Photoplay*, *Variety* and *Picturegoer* represented the inculcation of film "celebrity" and the stirrings of the Hollywood "star system", trading heavily on idealized images of film actors and actresses.

Cinema became part of an increasingly extensive network of distribution and advertising practices. Marketing and promotional strategies for new releases utilized the visual modes of communication also favoured by the new consumer culture, from "tie-in" publicity features in newspapers and magazines, to urban billboards and department store window-dressings. Moreover, as an inclusive leisure practice accessible to women "across the lines of class, generation and marital status", the cinema "opened up a space – a social space as well as a perceptual, experiential horizon – in the lives of women" (Hansen "Adventures" 53). Women had made up a significant proportion of the cinema audience since the early days of the Nickelodeon (Bilton 25), and the industry facilitated the further growth of female audiences with new content and marketing campaigns designed to consolidate, maintain and expand this interest.[23] Cinema thus became both an index and instrument of a shift in "women's status in the public sphere...from a discourse of domesticity to an updated ideology of consumption, superimposing models of feminine

[23] See, for example, film series and serials with female leads such as *The Exploits of Elaine* and *The Perils of Pauline* (both released by Pathé in 1914) and *The Hazards of Helen* (Kalem, 1914-1917), explicitly designed to appeal to a female audience.

virtue and female skills with appeals of pleasure, glamour and leisure, of sensuality, eroticism, and exoticism" (Hansen, "Adventures" 55).

These changes corresponded with a shift from the "transitional" era of film-making between 1907 and 1913 – during which the short comic films on electrotherapy explored in Chapter Three were released – to that of the "feature film". This included the gradual increase in the length of films from one reel to two, and eventually to multi-reel feature films with the capacity for sustained narratives. Plays and novels were increasingly sought as adaptive materials for this more expansive format. In addition, unlike the earlier one-reelers, which were typically exhibited for no longer than a single week, feature films generally remained on show for as long as audiences patronized them (Bowser 192), incentivizing exhibitors to make discerning choices about which new releases to show at their theatres, and to devise new promotional strategies through which to boost business. Audiences grew: by 1928, movie-theatre attendance in the US had reached 65 million (Koszarski 26), and cinema venues were transformed into elaborately-decorated "picture palaces" which "embodied the consumer ideal of purchasing a new self" (Bilton 25). It was from within this aesthetic and institutional context that Cosmopolitan's film *The Young Diana* emerged in 1922.

Founded in 1918 by the American media tycoon William Randolph Hearst, Cosmopolitan's mission was "to make popular yet artistic movies with high production values" (Wilson Smith 49). Hearst cast the 25-year-old American film actress Marion Davies in the lead role as Diana May, opposite Forrest Stanley as her one-time suitor Reginald Cleeve and the classically-trained theatre actor Pedro de Cordoba as Dr Dimitrius. The veteran French director and screenwriter Albert Capellani and the Italian-American actor-turned-director Robert G. Vignola co-directed. Screenwriter Luther Reed made several changes to the original text. In the film, Dr Dimitrius knows Diana as a young woman: in love with her himself, he wrongly informs her that Cleeve has abandoned her for another woman. The film borrows Corelli's dream frame device by staging the action which follows as Diana's unconscious imagining.[24] However, in the novel, Diana rejects the possibility of either revenge or renewed romance with her former suitor: whilst she remains a "reigning beauty", she has also opted for a life of independence and relative solitude as "a student and recluse" (380). Conversely, at the end of the film version, Diana awakens from her dream to find that she is "still young and

[24] See summary in "The Young Diana", *Variety*, 1 September 1922, p. 41.

lovely without the need of rejuvenation". Finally, "the picture fades out with the wedding of Diana and Cleeve" in a celebration and reaffirmation of youthful romantic union.[25]

The film premiered on August 27th at the Rivoli Theatre in New York, moving to its sister theatre the Rialto the following week, and then onto a third venue in Times Square – the Cameo – where, *Variety* reported, it did "corking" business.[26] This commercial success extended beyond New York, where it also played to large audiences in Seattle, Washington, Kansa City and Indianapolis, amongst other places. A deal for the film's distribution in Britain was reached at the end of the year.[27] Exquisite art-deco set designs and lighting by the highly-regarded architect and designer Joseph Urban furnished a range of theatrical set-pieces drawn from the book.[28] Praise from the *Motion Picture News*, reprinted in the *Exhibitors Trade Review*, focused on the Swiss ice carnival scene, in which the rejuvenated Diana, exquisitely attired in the latest fashions from Paris, elicits the admiration of men and the envy of women in high society ("And if Ever There Was"). Another review commended the spectacle of Diana's scientific rejuvenation, writing that "the laboratory scene in which the middle-aged spinster is restored to youth and beauty through the application of condensed light energy is the best executed of its kind to be shown on the screen".[29]

The film's aesthetic achievements were compounded by a range of marketing ploys which themselves operated chiefly through visual appeal. Alongside the usual newspaper, magazine and billboard and trade advertisements, Cosmopolitan arranged for innovative lobby displays for the first-run showing of the film. A series of large, ornamental gilt frames, each holding a coloured still from the film and lit by electric

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[25] See plot summary in "The Young Diana", *Exhibitors Trade Review*, vol.12, no. 16, 16 September 1922, p. 1077.

[26] "First Runs on Broadway", *Exhibitors Trade Review*, vol. 12, no. 15, 9 September 1922, p. 1018; "Knighthood Leads B'Way's Strongest Screen Offerings", *Variety*, Friday 22 September 1922, p. 44.

[27] "The Young Diana", *Exhibitors Trade Review*, vol. 12, no.17, 23 September 1922, p. 1141; "In Great Britain", *Exhibitors Trade Review*, vol. 13, no. 4, 30 December 1922, p. 186.

[28] In his essay on Joseph Urban, Matthew Wilson Smith offers the following remarks on Cosmopolitan's *The Young Diana*: "Like many films that Urban worked on, it remains of interest largely due to his designs, perhaps the best of which is a sophisticated, hypermodern office with semicircular chairs fitted into pillars and a central desk framed by art deco sculpture" (p. 53). Wilson Smith's essay reproduces a still image of the study, and a second still detailing the interior of Dr. Dimitrius' laboratory, from the archival collections of Columbia University Libraries. See Wilson Smith, "Architect of Dreams: The Theatrical Vision of Joseph Urban" in *Joseph Urban and the Birth of American Film Design*, edited by Arnold Aronson, Columbia University in the City of New York, 2000, pp. 48-55.

[29] See James W. Dean, *Logansport Pharos Tribune*, 12 September 1922, quoted in Joyce and Nicoletta, p. 676.

lights, was produced for the Rialto and Rivoli Theatres ("Novelty for Lobbies"). The spectacle of the film's lead actress was paramount to this showcase. The *Exhibitors Trade Review* marvelled that "The photographs of Marion Davies in the dual role of Diana May and the 'young' Diana lend themselves to the illuminating process, which brings out the details of the costumes which Miss Davies wears in this picture ("Special Lobby Display"). "This is a picture where the more you spend in boosting it the more you'll get out of it at the box office", it advised ("And if Ever There Was").

Marketing strategies for new releases centring on the image of the film's female star were not new; fan magazines such as *Photoplay* had been offering readers portraits of movie stars since the early 1910s. But *The Young Diana* offered a novel variation: the visual curiosity of a younger actress "aged-up". *Exhibitors Trade Review* identified the particular appeal of the film for female audiences in pull-out colour trade ads, noting that "in a dual role [Marion Davies] is seen in all her gorgeous beauty and magnificent gowns and as a drab "old maid". The actress's transformation from "spinster into ravishingly beautiful princess", it added, together with the "style show" provided by Miss Davies' wardrobe, were both valuable assets in "exploiting the picture to your fair-sex patrons".[30]

The film adaptation of *The Young Diana* did not just promise the novel's rejuvenation fantasy of an old woman restored to youthful vigour. It also offered the no-less tantalising prospect of its inverse: the apparent metamorphosis of a young beauty icon (Marion Davies) into a dowdy matron (the old Diana May). The novelty of this sensational alteration attracted particular attention in *Photoplay*. Founded in 1911, *Photoplay* was one of the first American film fan magazines, with extensive influence in the motion picture industry throughout the 1910s and 1920s. Unlike trade-oriented film publications such as *The Moving Picture World* and *Exhibitors Trade Review*, which targeted industry insiders, its main readership was the ticket-buying general public.[31] Gossip and news pertaining to the professional and private lives of film actors appeared alongside official interviews and autobiographies, within an image-heavy format comprising studio photo shoots, production stills, portraits of established and upcoming stars and glossy pull-out pin-ups. These, in turn, rubbed shoulders with visual

[30] See "Marion Davies in The Young Diana", a four-page colour trade ad for *The Young Diana* in *Exhibitors Trade Review*, vol. 12, no. 12, 19 August 1922, pp. 15-18.

[31] For more on the publication history of *Photoplay* magazine and its relationship to the film industry, see Anthony Slide, *Inside the Hollywood Fan Magazine: A History of Star Makers, Fabricators, and Gossip Mongers*, University Press of Mississippi, 2010, pp. 47-72.

advertisements for new fashion, health and beauty products which targeted a predominantly female readership. The August 1922 issue of *Photoplay* sought to stir up interest in *The Young Diana*'s release in its "Plays and Players" feature. Juxtaposing an image of Marion Davies playing the rejuvenated Diana with another of the actress made up as the older Diana May, it added the caption "We might as well tell you the secret at once: the old lady is Marion Davies, too, made up for one of her two roles in *The Young Diana*" (fig. 6.5).

Fig. 6.5 Images of Marion Davies as the "young" and "old" Diana May in the 1922 Cosmopolitan film *The Young Diana*, published in *Photoplay* magazine.

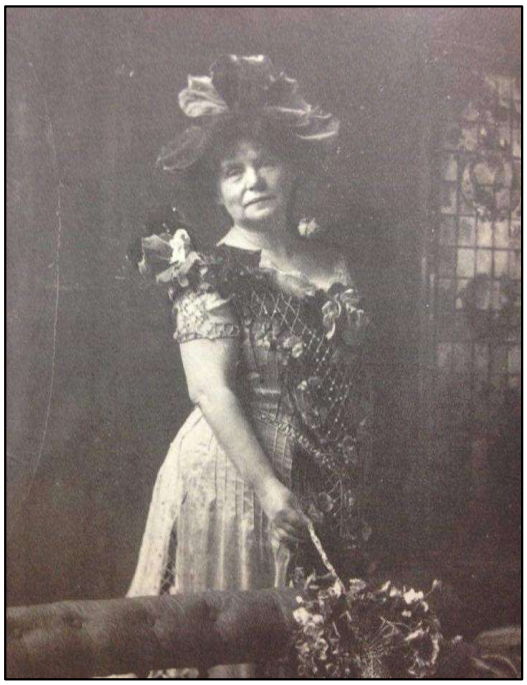
The "young" Diana on the left, smiling, smooth-skinned and attired in a white decorative veil, furs and jewellery, represents a striking contrast to the "old" Diana on the right, with prim up-do, plain collarless dress, dark eye circles and knitted brow. This visual comparison carried the full weight of the August issue's coverage of the film: although subsequent issues of the magazine addressed plot details and offered reviews, Davies's "make-under" functioned as the single initial enticement to the film's potential audience.

Analyzing these images in relation to other content contained within the pages of this *Photoplay* issue further illuminates the correlation between cinema's interest in rejuvenation and broader consumerist discourses of female transformation. The magazine's advertising section promoted skin-creams, beauty powders, hair-dyes and other cosmetic products targeting an image-conscious female readership. One advertisement, for Palmolive soap, featured an actress with an uncanny resemblance to the image of the "young" Diana, sporting short curled hair, a diaphanous white dress and elaborate jewellery (fig. 6.6). Like the images taken from the film, the advertisement

invoked the spectacular promise of physical rejuvenation through cosmetic solutions: "Every woman can transform her bad complexion into a good one", it assured, "for alluring freshness and clear color isn't a gift of Nature, but a matter of care". Elsewhere in the issue, the juxtaposed images of the "young" and "old" Marion Davies found a visual parallel in an advertisement for the Corrective Eating Society (fig. 6.7). The society's slimming regime couched its promises in the same language of rejuvenation used by the medical rejuvenators, promoting "the slender, supple figures of youth", the reduced appearance of wrinkles, and "renewed vitality and energy".

Figs. 6.6 and 6.7 (left to right) Advertisements for Palmolive soap and the Corrective Eating Society in *Photoplay* magazine, August 1922.

The configuration of the female body as a site for visual manipulation in the before-and-after photographs of the Corrective Eating Society's weight loss advertisement echoes Marie Corelli's personal interest in modifying her public image. Gabell's image of the 51-year-old author, altered at her request to conform to certain visual standards of youthful appearance (fig. 6.4), survives alongside another doctored photograph of the writer (fig. 6.9), together with its unretouched original (fig. 6.8).




Figs. 6.8 and 6.9 Unretouched and retouched photographs of Marie Corelli (undated).

Read alongside one another, *Photoplay*'s twin portraits of Marion Davies as old maid and young rejuvenate, the Corrective Eating Society's before-and-after shots and Corelli's unretouched and retouched portraits, tellingly represent an intertextual matrix of visual and written narratives of self-improvement applied to female consumers, spectators and readers.

Although they drew on a much smaller body of real-life medical rejuvenation procedures, the fictions of female rejuvenation produced in the early 1920s held a particular commercial appeal which male rejuvenation fictions from the same period lacked. Female rejuvenation fictions also differed from narratives of male rejuvenation in other ways. The male authors of "The Adventure of the Creeping Man" and *The Gland Stealers*, like "The Man Who Grew Young Again" and "The Rejuvenation of Major Rathbone" before them, typically left their rejuvenated male protagonists with renewed physical energy at the very least, and in some cases, with restored sexual function. In contrast, the female writers considered in this chapter explored the subjective experience of female rejuvenation within social environments which held ageing women to particular standards of physical appearance. Lady Ducayne, Theodora Desanges, Mary Zattiany and Diana May navigate pronounced moral judgements in their pursuit of youth as a means to achieve personal and social fulfilment. Whether they finally renounce their efforts to rejuvenate (Lady Ducayne) or maintain their rejuvenated state (Theodora Desanges, Mary Zattiany, Diana May), any power and autonomy they acquire comes at the cost of

ostracization or self-imposed isolation. Cosmopolitan's version of *The Young Diana*, adapted according to the emerging conventions of Hollywood's romance narrative, gave its heroine a happy ending. But in order to do so, it modified the dream device of Corelli's novel so that it is the organically young Diana, and not the artificially rejuvenated older woman, who marries the dashing suitor.

Gertrude Atherton's *Black Oxen* also acknowledged the double standards applied to ageing womanhood. Clavering recognizes that ageing "was not as hard on [men] as on women outgrown their primary function. Theirs at least the privilege of approach; and their deathless masculine conceit – when all was said, Nature's supreme gift of compensation – never faltered" (74). The rejuvenated Mary Zattiany ultimately renounces sexual desire in favour of the autonomy of political and humanitarian work. Leaving Clavering, she returns to Europe where she marries an ageing diplomat in order to regain influence in pursuing her former political cause. Thus, though Atherton identifies the potential of female rejuvenation science to create new forms of personal agency and social purpose borne from a potent combination of beauty and experience, her protagonist cannot enjoy the fruits of these within the parameters of contemporary American society. The screenwriters adapting Atherton's novel retained its original ending for Mary, but offered the film's audience a compensatory twist. Clavering's ultimate engagement to the capricious flapper Janet Oglethorpe is not a feature of the original text. Although it contradicts his explicitly negative attitude towards her childish pursuit of him, the union functions as an irresistible concession to the energy and vibrancy of the cult of youth upon which the film industry thrived.

The fictions of female rejuvenation explored throughout this chapter documented women's intimate relationship to ageing in the early twentieth century. Analyzed collectively, and juxtaposed with the male rejuvenation fictions covered in the previous chapter, they also testify to the gendered characteristics of ageist discourses operating in tandem across multiple sites within popular culture. In the hands of male writers, physicians, advertisers, directors and screenwriters, female rejuvenation typically operated as a sexual and commercial fantasy which exploited and exhibited widespread pressures placed on women to retain their youthful looks. Women writers from the *fin de siècle* and the 1920s also explored the possibilities, limitations and contradictions of these fantasies, their creative outputs shaped by subjective interest. Their work registered a fundamental paradox at the core of female rejuvenation that male-oriented medical, commercial and cinematic discourses on the topic concealed: the ageing female subject

was expected and encouraged to rejuvenate, but her open efforts to do so, and her ultimate success in this, if achieved, typically met with acerbic distaste. Though it inspired the *rêve* of corporeal plasticity and social ascendency, in *réalité*, female rejuvenation, however it was pursued, delivered neither.

Afterword

The cognitive linguists George Lakoff and Mark Johnson have argued that metaphor plays a crucial role in structuring our understanding of everyday realities. The conceptual metaphors we live by are not simply the province of journalists, writers, and other cultural practitioners – scientists, too, are "human beings who necessarily use the tools of the human mind" (252). The influential power of conceptual metaphor can also facilitate and uphold particular economic, political and social worldviews. Because these "metaphorical mappings" have somatic foundations, identifying and analyzing these metaphors in their historical and contemporary manifestations can therefore reveal particular forms of bodily experience (246).

This study has traced the ways in which the conceptual metaphor of energy, applied to the human body across scientific and cultural discourses across the period 1870-1925, was shaped by an economistic narrative. The conditions of modern productivism intrinsic to the Second Industrial Revolution demanded bodies which were unfatigued, active and efficient: strenuous in their applied labours and ardent in their desires for commodity-assisted corporeal transformation. According to this energetic paradigm, youth was newly exemplified as the ideal physical state and characterized in accordance with dominant gender formations. The prototypical male body exhibited the virile energy of youth and the idealized female body exuded a nubile vitality. Bodies that fell short faced diverse disciplinary strategies designed to marshal, release and restore corporeal vigour and verve. The practices of electrotherapy, Taylorism and rejuvenation medicalized perceived states of corporeal inactivity at a historical moment when "medical logic…adjusted itself perfectly to the cultural logic of industrial capitalism" (Paterson and Hughes 39).

Throughout the six chapters of this thesis, I have analyzed a variety of scientific and cultural materials that employed a conceptual understanding of the body as an economy of energy in hegemonic operations. Medical treatises pathologized exhaustion as "neurasthenia" and newspaper reports vilified the itinerant unemployed population as "microbe[s] of social evil". Advertisements exalted the metamorphic possibilities of electrotherapy devices and rejuvenation treatments that would transform enervated or ageing bodies with revitalizing power. The contributions of literary fiction and silent film in these areas were heterogeneous. Some cultural forms, such as Edward Bulwer-Lytton's

novel *The Coming Race* (1871), the early "Old Maid" films (1898-1910) and Pathé-Frères' *L'incendiaire/Careless Tramp* (1909), creatively reproduced the dominant rhetoric emphasizing the need for corporeal re-energization. However, other examples utilized the innovative possibilities of their respective media to explore the practical consequences, ethical implications and ideological contradictions of such strategies. The comic electrotherapy shorts released between 1906 and 1911 explored in Chapter Three; Jack London's portrait of the impoverished elderly boxer Tom King examined in Chapter Four; and the speculative vision of female rejuvenation furnished in Marie Corelli's novel *The Young Diana* examined in Chapter Six: all represent cultural sites in which scientific and social developments were magnified, narrativized, satirized, scrutinized and problematized in popular written and visual forms accessible to a wide readership or audience.

Juxtaposing the strategies for re-energizing fatigued, neurasthenic and idle bodies with those converging on ageing male and female bodies reveals important continuities and developments in medical and commercial approaches to corporeal regeneration. From the second decade of the twentieth century onwards, commercial electrotherapy treatments traded increasingly on explicitly rejuvenatory promises. For example, the marketing materials for the Overbeck Rejuvenator that were circulated widely in both Britain and Australia from the mid-1920s onwards, combined the promises of cure for nervous complaints from earlier devices with a new emphasis on old-age invalidism (Stark 2014). Similarly, electrical devices released onto the US market between 1920 and 1940 claimed to renew corporeal vitality through glandular, as opposed to nervous, stimulation. Accessories such as the electric belt were joined by new electrical devices which promised the reclamation of a youthful appearance to female users, and the restoration of sexual energy to male consumers.[1] In addition, the rejuvenation treatments developed by Brown-Séquard, Voronoff, Steinach and others represented newly-invasive scientific interventions with a conceptual basis in the metaphor of the corporeal energy-economy. Therapies involving testicular serums, xenotransplantation,

[1] For a British example, see James F. Stark's analysis of the Overbeck Rejuvenator device in the 1920s in "'Recharge my Exhausted Batteries': Overbeck's Rejuvenator, Patenting, and Public Medical Consumers, 1924-37", *Medical History*, vol. 58, no.4, October 2014, pp. 498-518. In the US, the New York-manufactured Electropoise belt was marketed primarily to women into the 1930s, purporting to combat the physiological effects and cosmetic signs of both fatigue and ageing. The Thermalaid and the GHR Electric Thermitis Dilator were marketed to American men between the 1920s and 1940s. Both claimed to work by directly stimulating the prostate with electric energy. See Thomas de la Peña, pp. 121-25 and pp. 164-70.

organotherapy and irradiation emerged with an evolving chemical knowledge of the body's functions. This knowledge supplemented, but did not entirely supplant, earlier understanding of bodily energy as an expendable quantity of nerve-force.

Gillian Beer has observed that "interdisciplinary studies do not produce closure" (*Forging* 5). In tracing the circulation of discussions and representations surrounding energy and the body across a wide range of areas and genres, my own interdisciplinary study points accordingly towards multiple avenues for further enquiry. In the sections below, I suggest new research directions focusing on nineteenth- and early twentieth-century contexts, and outline the potential for future scholarship on the topics covered in this thesis as they relate to the contemporary moment.

Future research directions: the late-nineteenth and early-twentieth centuries

There is still considerable work to be undertaken on the medical and cultural histories of fatigue and neurasthenia analyzed in Chapter One of this thesis, and their relationship to the industrial classes. Research on the British context has begun with Steffan Blayney's doctoral project, titled "Fatigue in Britain: Work, Medicine and Society, 1914-1945". Blayney has highlighted the continuing tendency of scholarship to focus on fatigue and neurasthenia as middle-class conditions, and to tell these histories "from above", using the writings of doctors and intellectuals. Reviewing Anna K. Schaffner's recently published book *Exhaustion: A History*, Blayney points out that "proletarian forms of exhaustion – for example the 'industrial fatigue' which exercised governments and employers in Europe and America in the first half of the twentieth century – are near-absent". "Working-class exhaustion", he concludes, "is worthy of its own history" ("Book Review"). His own project traces the implications of the "science of work" for workers themselves, investigating the embodied experience of work and "industrial neurasthenia" in the personal accounts of labourers from the period, alongside legal and political debates surrounding the working body.[2]

Chapters One, Two and Three of this thesis drew on historical and cultural accounts of vagrancy in Britain and the US. A more expansive investigation into the place of the tramp in the socio-cultural imagination might incorporate films from the pioneering

[2] Summary drawn from my email correspondence with the author. Steffan Blayney, "Re: Fatigue etc.". Email received by Catherine Oakley, 22 August 2016.

and transitional eras of cinema. The tramp was a ubiquitous figure in cinema in the years preceding the incarnation of Charlie Chaplin's "little tramp".[3] Subsequent archival work in this area might explore the changing dimensions of the screen stereotype in relation to shifting political, economic and cultural perspectives on idleness and employment. A methodological approach alert to the discursive intersections of science and culture, and to cinema's ideological heterogeneity, may also be productively employed in examining the connections between scientific management as a socio-economic practice, and its filmic mediations. Chapter Three of this thesis explored the subversive mechanisms of physical comedy operating in a particular group of early comic electricity films and concluded with reference to the social function of collective laughter. There is a need for additional scholarship along these lines that follows Rob King's instructive example in reconciling "the interpretation of comedy…with the study of working-class culture and experience" (15).

The diverse archival materials uncovered in Part II of this thesis indicate that medical and cultural histories of rejuvenation in the early twentieth century are only just beginning to be told. There is considerable scope for future work in this area which examines the medical, economic, social and cultural prioritization of juvenescence and the quest for juvenescence during this period, and corresponding practices of corporeal rejuvenation. Such a critique must be sensitive to discursive formulations of class, gender and commercialism. As I argue in Chapter Six, these elements fuse with particular intricacy in discussions and representations of female ageing. Subsequent research in this direction might integrate the untold medical history of female rejuvenation with analysis of rejuvenation as a cultural phenomenon extending across mass-market magazines, advertising materials, literary fiction and films targeting a female demographic.

A comprehensive study of the discursive formations of bodily energy throughout the late nineteenth and early twentieth centuries is beyond the scope of any single study. This thesis has therefore necessarily been selective in its focus on the categories of fatigue, neurasthenia, idleness and ageing as conditions of corporeal energy depletion, and on the corresponding strategies of re-energization that have accompanied these. Two particular regenerative practices have featured peripherally in the preceding pages and

[3] Keyword searches for "tramp" and "vagabond" in collection databases at the National Film Archive, London, the Library of Congress, Washington D.C., and on Gaumont Pathé's online archive reveal multiple titles produced during cinema's transitional era (c.1907-1913), a number of which have survived as complete prints.

merit more substantive consideration, going forward. The first of these is diet. From Nikola Tesla's invocation of "healthful nutriment" as a key means of increasing "human energy" (1900) and Bovril's appropriation of the fictional electrical force of "vril" (1902), to the boxer's economy of metabolic energy in Jack London's "A Piece of Steak" (1909), discourses surrounding calorific energy have recurred throughout this study. From the 1840s onwards, the science of nutrition investigated the chemical conversion of food into energy within the body, guided by the new concept of metabolism (Kamminga and Cunningham 1995). Future research might therefore consider the conceptualization of bodily energy in relation to the production of scientific and popular understanding of diet and nutrition. This investigation could draw on the findings of Lesley Steinitz's current doctoral project, titled "Health Foods and Industrial Culture during Britain's Decadent Era, 1880-1920", which incorporates a wide range of sources from popular print culture, including advertising materials and popular science periodicals.[4] It might also examine the intersection of discourses surrounding fatigue, neurasthenia, ageing and rejuvenation with alimentary regimes such as Fletcherism, together with wider cultural mediations of nutritional science.[5]

An expanded study of bodily energy might also consider regenerative practices involving radium. In the early twentieth century, radium seemed able "to turn the body itself into a mechanism for producing continuously renewable energy" by facilitating cellular renewal (Thomas de la Peña 10). Steinach's female patients underwent irradiation of the ovaries with the hope of restoring their physical energy and aesthetic vitality. Thomas de La Peña's initial work on radium gadgets in the early twentieth-century US medical marketplace, and Lucy Santos' research into the use of radioactivity in health and beauty products marketed to British women around the same time, suggest that radium may have occupied a position in the medical and cultural imagination at this time that is as yet only minimally explored.[6] Future research on bodily energy and radium

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[4] Also see Steinitz, "The Language of Advertising: Fashioning Health Food Consumers at the *Fin de Siècle*", in *Food, Drink and the Written Word in Britain, 1820-1945*, edited by Mary Addyman et al., Routledge, forthcoming.

[5] The American health food enthusiast Horace Fletcher advocated a dietary regime with prescriptive mastication, which he suggested had rejuvenating effects. See Fletcher, *Fletcherism, What it Is; Or, How I Became Young at Sixty*, Frederick A. Stokes Company, 1913. On cultural mediations, see, for example, American Mutoscope and Biograph Company's 1908 comic short *Energizer*, which satirized the fad for revitalizing breakfast cereals marketed by health reformers through scenes in which both a middle-class gentleman and a passing tramp are invigorated after imbibing an energy-boosting food product.

[6] See Lucy Santos, "Radiating Beauty: The Use of Radium in Beauty Products in the United Kingdom, 1900-1939", doctoral dissertation, The Open University, forthcoming.

might also productively intersect with preliminary work on radium in science fiction stories from the early twentieth century that is underway on the AHRC-funded project "Unsettling Scientific Stories: Expertise, Narrative, and Future Histories".[7]

James Stark's current research into the diverse range of rejuvenation strategies in inter-war Britain and their impact on public and professional understanding of youth and ageing focuses on five major methods: hormone treatments, electrotherapy, skin care, dietary regimes, and exercise. Observing the fluidity of the boundaries between these five areas, Stark is considering the shared and distinctive characteristics of these practices in relation to post-war gender relations, shifting socio-cultural perceptions of youth and beauty, and expanding commercial interests.[8]

The intersectional nature of the various lines of enquiry outlined above recommends interdisciplinary and multidisciplinary approaches. Stark's research project "Pasts, Presents and Futures of Medical Regeneration" at the University of Leeds has brought together a cohort of researchers from the fields of Sociology, Bioengineering, Psychiatry, Philosophy, History, History of Medicine and Cultural Studies, to examine the historical and contemporary meanings of human regeneration in its many forms.[9] My own experience as research assistant on this project has alerted me both to the methodological challenges and the research-enriching opportunities that exist when scholars from different disciplines approach such enquiries both individually and collectively. It is part of the mission of the Leeds project, as it is of this thesis, to testify to the critical importance of the study of human regeneration, and to demonstrate in action the instrumentality of an interdisciplinary approach in undertaking it.

Future research directions: the early twenty-first century

The practice of cultural materialism insists on a criticism that draws upon historical perspectives to inform contemporary debates:

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[7] See Iwan Rhys Morus, "A Boy's Own Radium", *Unsettling Scientific Stories*, September 2016, unsettlingscientificstories.co.uk/boys-own-radium. Accessed 21 Sept. 2016.

[8] Summary based on conversation with the author.

[9] This year-long project was funded by a Wellcome Trust Seed Award. Audio recordings and reports from three project workshops held in January, April and July 2016 are accessible via the project website. See "Publications and Presentations", *Pasts, Presents and Futures of Medical Regeneration*, University of Leeds, arts.leeds.ac.uk/medregen/publications.

> It is significant that much of the most accessible and influential work of the counter-hegemony is historical: the recovery of discarded ideas, or the redress of selective and reductive interpretations. But this in turn has little effect unless the lines to the present, in the actual process of the selective tradition, are clearly and actively traced. Otherwise any recovery can simply be residual or marginal. It is at the vital points of connection, where a version of the past is used to ratify the present and to indicate directions for the future, that a selective tradition is at once powerful and vulnerable. (Williams, *Marxism and Literature* 116)

Such processes of recontextualization as Williams describes here, which elucidate both hegemonic and counter-hegemonic narratives as they operate currently across a range of institutional and cultural sites, are urgently required on the topic of bodily energy. The displacement of "selective and reductive" historical interpretations with diachronic, interdisciplinary perspectives is crucial to the work of exposing and challenging the systemic operations of contemporary neoliberalism and its regulatory claims on the human body. The "emphatic turn" towards neoliberalism in global political and economic practice since the 1970s has resulted in deregulation, privatization and the withdrawal of the state from social provision in many areas. A hegemonic mode of discourse which "seeks to bring all human action into the domain of the market", neoliberalism has "become incorporated into the common-sense way many of us interpret, live in, and understand the world" (Harvey 2, 3).[10] Giardina and Newman have argued that "the body sits at the locus of [the] neoliberal revolution". There is therefore a pressing need for scholarship to address "the politics of the body within the neoliberal condition, and the way the body and its health and well-being [are] leveraged as a pedagogical apparatus of neoliberalism" (527, 523). The historicist work of this thesis opens up new topical and methodological possibilities for future research exploring discourses surrounding fatigue, idleness, ageing and rejuvenation in the twenty-first century moment. Two particular – and related – areas of enquiry in this direction emerge from this study: both of which converge on the body as a site of ideological conflict.

[10] Harvey defines neoliberalism as "a theory of political economic practices that proposes human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets and free trade." *A Brief History of Neoliberalism*, Oxford UP, 2005, p.2.

Neoliberalism and the working body

In the final chapter of *The Human Motor*, Anson Rabinbach concludes that the energy paradigm applied to the body in the late nineteenth and early twentieth centuries is no longer relevant to today's information-based economy of work. Technologization, he argues, has heralded the "obsolescence of the body", and correspondingly, "the end of the work-centred model of society" (299). Yet, even if, as Rabinbach suggests, "physical work no longer occupies the position in social thought and practice it once did in the perceptual universe of the nineteenth century" (295), that is not to say that the economistic conceptualization of the working body as an economy of energy has been entirely displaced. Instead, over the course of the twentieth century, it has been transformed in accordance with wide-ranging social, political, economic and cultural changes. Future research in this area might therefore pay attention to the particular configurations of an energetic paradigm of the working body in relation to the corporatist tenets of modern neoliberalism. Steve Sturdy has sketched a trajectory "from earlier understandings of the body as a source of productive energy" to a model in which "workers' bodies now provide the somatic basis for functional flexibility". With such a shift, the illusion of autonomy belies continuing institutional control: "workers are rarely free to decide on the rate of production or the kinds of product they can turn out, but only on how they are to meet the stringent demands imposed on them by higher levels of management" (232, 230). More recently, Peter Fleming has offered accounts of managerialism, office-related paranoia and job-related suicides as evidence of technocratic capitalism's project of rationalization, built upon the directives of "efficiency, utility and input-output effectiveness" (8).

Modern society continues to place demands on bodily energy insofar as it is still conceived widely as a physical capacity for work. Despite the contraction of the working day since the late nineteenth century, long hours and short breaks persist in global industries driven by productivism in pursuit of ever-increasing profits.[11] Meanwhile, work continues to encroach on perceived domains of corporeal inactivity. Global medical

[11] Recent high-profile investigations and media reports in both Britain and the US have highlighted working practices which contravene human rights. See, for example, Will Martin, "'Culture of fear' at Sports Direct allegedly drove a worker to give birth in a warehouse toilet", *uk.businessinsider.com*, 7 June 2016,uk.businessinsider.com/union-bosses-say-that-they-have-no-knowledge-of-a-review-of-sports-directs-employment-practices-2016-6 and Shruti Singh, "Denied Breaks, U.S. Poultry Workers Wear Diapers on the Job", 11 May 2016, *Bloomberg.com*, www.bloomberg.com/news/articles/2016-05-11/poultry-workers-in-diapers-as-bathroom-breaks-denied-oxfam-says.

research into the physiology of fatigue, sponsored and supervised by military agencies, is focusing on the potential of the drug modafinil to eliminate soldiers' need for sleep (Crary 1-4, Saletan). The moral dimensions of discourses surrounding work and fatigue in the late nineteenth and early twentieth centuries prevail within current economic policy and political debate surrounding unemployment, welfare provisions, Work Capability Assessments (in Britain) and Supplemental Security Income (in the US).[12] These government programmes share the same foundational model of the ideal body as their ideological antecedents: energetic, compliant and without impairment. This corporeal paradigm undergirds neoliberalism's operational belief that "unemployment is always voluntary" (Harvey 53).

Neoliberalism and the ageing body

The scientific basis of Steinach and Voronoff's rejuvenation theories and practices was increasingly contested from the late 1920s onwards (Hamilton, 121-135).[13] Yet, rejuvenation remains a provocative topic, located at the nexus of medical and cultural discourses. For example, the *fin-de-siècle* short stories of Robert Duncan Milne and Mary Elizabeth Braddon explored in Chapters Five and Six of this thesis drew on widespread conceptualizations of blood as a vital substance in their dramatic fictional accounts of rejuvenation through blood transfusion. The modern science of parabiosis, and its recent announcement that infusions of young blood may reverse the effects of human ageing, demonstrates the persistent ambiguity surrounding rejuvenation as fact/fiction.[14]

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[12] The Work Capability Assessment (WCA), also referred to as the "fitness for work" assessment, is a medical test used by the British government's Department for Work and Pensions (DWP) to evaluate an unemployed individual's entitlement to sickness benefits. See "Employment and Support Allowance", *gov.uk*, 12 April 2016, www.gov.uk/employment-support-allowance/overview. A longitudinal study published in 2015 reported that the WCA was independently associated with an increase in suicides, self-reported mental health problems and increased antidepressant prescription. See B. Barr et al., 'First, do no harm': are disability assessments associated with adverse trends in mental health? A longitudinal ecological study, *Journal of Epidemiology and Community Health*, vol. 70, no. 4, 2015, pp. 339-45. The Supplemental Security Income (SSI) is a US government program that provides stipends to workers deemed unable to engage in "substantial gainful activity" due to age, blindness or disability. See "Supplemental Security Income Home Page – 2016 Edition", Social Security Administration, www.ssa.gov/ssi/.

[13] See David Hamilton, *The Monkey-Gland Affair* (Chatto & Windus, 1986), for an account of the decline in rejuvenation theories and practices (pp. 121-35).

[14] See Saul A. Villeda et al., "Young blood reverses age-related impairments in cognitive function and synaptic plasticity in mice", *Nature Medicine*, vol. 20, no.6, May 2014, pp.659-63 and Ian Sample, "Can we reverse the ageing process by putting young blood into older people?", *The Guardian*, 4 August 2015, www.theguardian.com/science/2015/aug/04/can-we-reverse-ageing-process-young-blood-older-people.

As the history of rejuvenation presented in Part II of this thesis attests, where exploratory medical research in this area meets the cultural imagination, there are both commercial and creative opportunities. The sale of putative anti-ageing products and treatments, including skin-care, hair colorants, hair restoration treatments and cosmetic surgeries is a lucrative global industry, predicted to be worth $191.7bn globally by 2019 ("Anti-aging Market"). Today's rejuvenation market inherits the same cultural understandings of, and attachments to, the aesthetic and social value of youth exploited within the commodity culture of the late nineteenth and early twentieth centuries. If we look at the claims of anti-ageing products and therapies today, we see continuity despite change. Drawing on the methodologies employed in this thesis, critical evaluations of twenty-first century "rejuvenation" discourses might then ask: What forms of regulation should be extended as demand and innovation for anti-ageing treatments in the medical marketplace grow? How are ageing and rejuvenated bodies configured in medical research and in cultural forms, and what are their ideological implications?

To engage critically with medicine-as-institution under neoliberalism is to recognize the configurations of a political and economic emphasis on individual responsibility and self-governance as they apply to discourses of health and the body. The expansion of the pharmaceutical and cosmetic industries goes hand-in-hand with neoliberal forms of power which are "intimately tied to…a particular manner of living obligations" (Read 27, 29). A gendered analysis of the ideological formation of the ageing body under late capitalism can reveal particular discursive characteristics at the intersections of ageism and sexism. Such a critique must explore the extent to which the argument for female empowerment through consumer choice holds up against the manipulations of the (still largely male-owned) medical market in rejuvenation, and the enduring socio-cultural devaluation of the visibly-ageing woman. It might also consider the socio-cultural and economic factors which inform the diagnosis and care of senile erectile dysfunction as an undesirable condition of later-life masculinity.[15]

Western industrialized countries are formulating new political and economic strategies in response to the challenges posed by ageing populations, with profound

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[15] See "Erectile Dysfunction Drugs Market is expected to reach an estimated value of US$3.4 billion in 2019: Transparency Market Research", *Nasdaq Globe Newswire*, 16 April 2015, globenewswire.com. Barbara L. Marshall and Stephen Katz trace a trajectory from ideas and practices surrounding male sexual fitness in the nineteenth century to the "technologization" of male sexuality in the Viagra revolution in their essay "Forever Functional: Sexual Fitness and the Aging Male Body", *Body & Society*, vol.8, no.4, December 2002, pp. 43-70.

implications for healthcare, social security systems and environmental planning. An economistic perspective on age which holds older people to have expended their productive energies has contributed to a socio-cultural perception of the older generation as a "burden" on society. This is contiguous with the emergence of what Stephen Katz refers to as the "new aging" – cultural practices emphasizing "independence, activity, well-being and mobility" which seek to disrupt linear biomedical and social models of ageing, and their associated stereotypes of "decline, disease and dementia" (16). As Katz points out, despite its myriad benefits, this model also licenses a global market in anti-ageing solutions which reify the neoliberal logic of individual responsibility. The scale and influence of such ideological operations calls for tenacious disciplinary, interdisciplinary and multidisciplinary critiques of our relationships with our bodies, and the range of ways in which we perennially seek to repair, re-envision and remake them.

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